

CTO

THE MAGAZINE FOR INFORMATION EXECUTIVES

FEBRUARY 1993

VOLUME SIX NUMBER SEVEN

SEVEN DOLLARS

The motion picture industry
has its OSCAR.

Broadway has its TONY.

Television has its EMMY.

IS has the ESPRIT.SM

The ESPRITSM?



The Magazine
for Information
Executives

February 1993

INTRODUCING THE ESPRITSM AWARDS

Dear Colleague:

Return on investment from information technology (ROI-T) is its own reward, but how about a little recognition for your efforts?

You've worked long and hard developing an information technology (IT) plan and applying it to your business strategy. Now CIO and Booz-Allen & Hamilton want to recognize those companies that can demonstrate proven, tangible, bottom-line improvements as a result of implementing IT solutions.

Last year, we asked readers to send us their ROI-T success stories and published the best examples in our January 1993 issue. Given the positive response to that call for entries, we're taking the ROI-T program one step further by introducing the **ESPRITSM Awards for Excellence in Strategic Partnering for Return from Information Technology.**

The goal of this awards program is to shine a spotlight on companies, government agencies and not-for-profit organizations that can best demonstrate the business benefits of information technology. By recognizing organizations that have built systems of exceptional business value and publicizing their methods for measuring the ROI of those systems, CIO hopes to inspire others in their search for ROI-T.

CIO's January 1994 issue will profile the winning organizations. The winners will be honored again in early 1994, when CIO and Booz-Allen & Hamilton will host a special awards ceremony.

Be on the lookout for your March issue of CIO, where you will find the official ESPRITSM Awards entry form. If you would like to get started sooner, please fax the form located on the inside back cover of this issue to Editorial Assistant Mina Ahn at 508 879-7784, and we'll send you an entry form right away.

Sincerely,

Joseph L. Levy
President/Publisher
CIO Publishing Inc.

Sincerely,

Robert J. Franz
Senior Vice President
Booz-Allen & Hamilton

CIO

THE MAGAZINE FOR INFORMATION EXECUTIVES

FEBRUARY 1991
VOLUME SIX NUMBER SEVEN
SEVEN DOLLARS

COVER STORY

Pop Goes The Network

*Rock's TV flagship abandons
the heavy metal*

ALSO INSIDE:

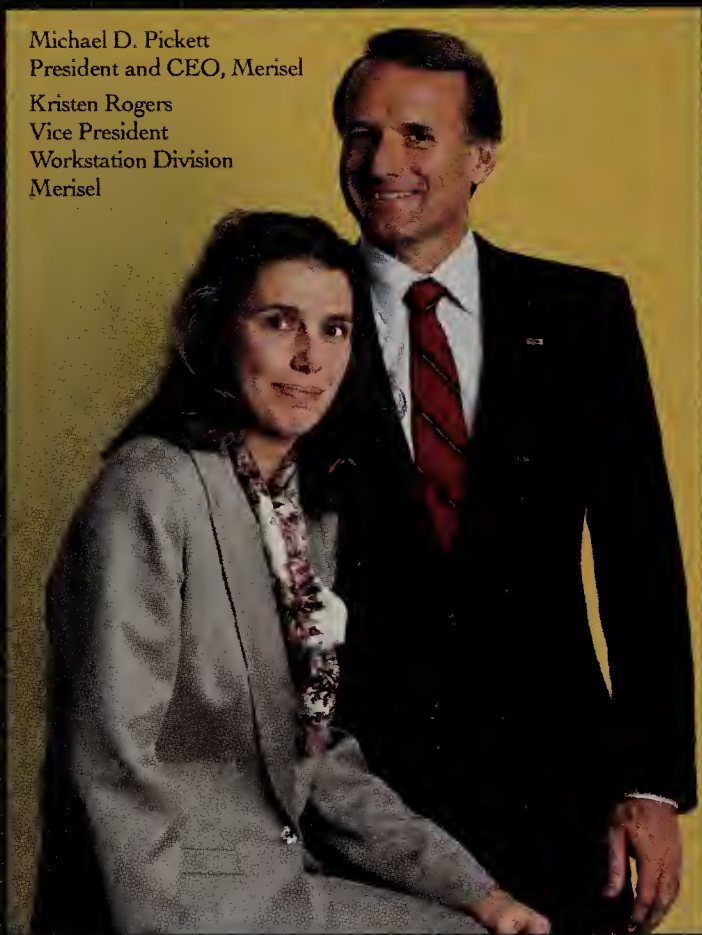
Anatomy Of A Reengineering Campaign

Viacom International's
Henry Leingang

DIGITAL OPENS NEW MARKETS FOR MERISEL.

Michael D. Pickett
President and CEO, Merisel

Kristen Rogers
Vice President
Workstation Division
Merisel



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E N A D V A N T A G E.

BUSINESS**INTERNATIONAL
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One by one, world trade is falling, leading to the rise of a truly global marketplace.

Aided by the substantial breakthroughs in telecommunications and computer technology, many firms are finding it easier than ever to enter markets around the world that were previously unreachable.

Even the smallest firms are now able to compete on a global basis, and are finding that overseas markets offer greater growth potential than domestic markets, which may be flat or saturated.

However, this advent of increased global competition has had a brutal impact on price margins.

Local firms which had previously been protected by tariffs or government support are now finding themselves pressed to compete with the new breed of global competitors, who take advantage of economies of scale to offer products of quality at lower prices.

This new global marketplace has created the demand for multi-currency financial software that can consolidate a firm's global financial picture into one integrated balance sheet or P&L in seconds.

Due to very confusing, complex and ever-changing tax structures and foreign currency exchange rates that vary country-by-country—this presents a new challenge to the new breed of CFOs. ■

**PRESSURE
HEATS UP ON
FINANCIAL
FORECASTING**

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powerful and are wooing from traditional environments. UNIX, AS/400, and AS/2 offer incredible breakthroughs and (graphical user interfaces).

These hardware platforms are waiting for users to await proven, mission-critical applications to run on these exciting systems.

DOWN-SIZING TRENDS ACCELERATES

What will be needed is a way to integrate innovative, new, cost-effective platforms and technology with clients' existing systems and investments.

One can afford to walk away from past investment and start over, pouring hundreds of millions of dollars into IS systems for several decades, but America is starting to demand a return from its MIS departments.

(Return On Investment) of IS is difficult to measure and impossible to project. But still, a meaningful way to assess it must be found.

One aspect of it that is easy to understand is the amount of money in existing IS systems.

Adding back and adding up the investment in systems, training, development, etc., it's easy to know how much a corporation will be abandoning its current systems.

Corporations who have undergone this exercise, it can be quite a sobering experience. It also puts in a new light proposals to scrap existing systems. ■

INVESTMENT PROTECTION #1 PRIORITY

Many hardware and software vendors are proponents of "starting over" for various self-serving reasons, it is rarely a cost-efficient or rational move for clients. Instead, prudent clients focus on evolutionary technological advances, as opposed to revolutionary ones. There's no reason to throw away existing systems when there's always technology that integrate the old with the new.

CIO

VOLUME 6, NUMBER 7

COVER STORY

Pop Goes the Network

At MTV parent Viacom International, the new anthem these days could be, "I want my L-A-N!"

By Thomas Kiely

42



Rocking the information platform 42
Cover photo by Kent Hanson

FEATURES

Reinventing the Heal

Facing shrinking revenues and burgeoning labor costs made worse by a labor shortage, west Florida's Lee Memorial Hospital is reengineering the way it delivers care.

By Meghan O'Leary

32

The Best of Both Worlds

Centralized and decentralized organizations offer strikingly different benefits, and combination companies hope to reap them all. A strong and supple IS organization is critical to holding all that diversity together.

By Thomas Kiely

48

Ethical Gray Matters

Very little is black and white when it comes to issues such as data integrity, employee privacy and vendor relationships. Lacking clear-cut answers, information executives must choose carefully between the right and the not-so-right.

By Richard Pastore

58

Curing the hospital 32

M O R E ► ► ►

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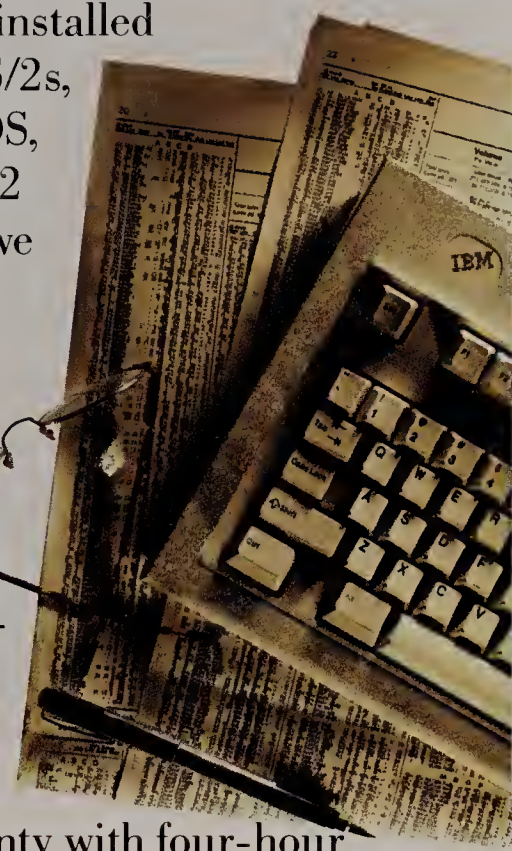
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President, Otis Elevator
North American Operations

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real-life business problems."*

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COLUMNS

INSIGHTS: IN SAFEKEEPING

The failure to keep track of and manage software on all levels can cost an organization some serious time and money. Often what is really being squandered—people's ideas—can never be recouped.

By Richard Harter

22

FIRST PERSON: A-TEAMS IN RESIDENCE

By making its problem-solving SWAT teams a permanent fixture, The Dime Savings Bank has improved the relationship between technical staff and users and the long-term performance of both.

By Jack Wagner

28



A losing situation 22

STATE OF THE ART: A REALLY BIG SHOW

Today's presentation software offers zippy visuals and effects along with new ease in preparing presentations. But users beware—too much sizzle can obscure the steak.

By Lucie Juneau

64

FRONTLINE

The ability to run imaging applications—once available only to large organizations with extensive resources and pressing needs—on existing client/server systems can transform the way your company does business.

By Portia Isaacson

68

WORKING SMART: THE FDIC'S BORROWED IMAGE

To facilitate the centralized sale of nonperforming loans from around the country, the FDIC took a short-term lease on a high-tech system.

By Megan Santosus

76



Team tactics 28

DEPARTMENTS

Editor's Letter 8

Publisher's Letter 10

Trendlines 14

- ▶ Voice-response systems
- ▶ Intelligent highway
- ▶ News that goes with you
- ▶ Baby-boomer CEOs
- ▶ An IBM critique

- ▶ VideoBooth
- ▶ CIO mistakes
- ▶ Career moves
- ▶ Soldier's computer
- ▶ New ventures
- ▶ Calendar of events
- ▶ Light response
- ▶ Speaker change

Index 74

Lowering the boom 14





The move to distributed computing presents an assortment of—shall we say—opportunities for information executives. Two articles featured in this issue dramatically illustrate the importance of staying tuned to both technology and organizational culture when redesigning information management platforms.

Broadcasting giant Viacom International discovered a barrage of technological pitfalls on its way to implementing an ambitious downsized computing environment. In "Pop Goes the Network" (beginning on Page 42), Senior Writer Thomas Kiely reports that implementing Viacom's elaborate local area network, which

links 1,900 PCs, was difficult because vendors were often unable to provide clear information about available technology.

Compounding the complexity of this situation was the company's highly decentralized corporate structure, with each division having its own IS chief. At a time when downsized and decentralized environments are perceived as threatening the tenure of CIOs, Viacom executives saw a clear need to hire a top information executive who could manage the big technological picture. (A standard computing platform also helps keep complexity from getting out of control.) The role of the CIO and central IS staff is still evolving as the divisions reap the benefits of an increasingly sophisticated IS architecture.

While the various IS constituencies drove the downsizing effort at Viacom, the reengineering effort at Lee Memorial Hospital in Fort Myers, Fla., took on a more amoebic life involving a vast cast of characters from patient-care teams and a skeptical board of directors, among others. In "Reinventing the Heal," beginning on Page 32, Senior Writer Meghan O'Leary follows the many players in the pilot project to reengineer the process of delivering patient care in the orthopedics unit. The enabling technology includes terminals outside patients' rooms to help a variety of professional and ancillary caregivers record and retrieve information in a highly interactive process.

Although the hospitalwide reengineering effort will take five years to implement and hard numbers delineating the benefits are not yet available, Lee Memorial appears to be impressed with the new process for managing patient care. Both Viacom and Lee Memorial demonstrate the importance of carefully orchestrating the interaction of technology and people.

Marcia Blumenthal



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CTO

THE MAGAZINE FOR INFORMATION EXECUTIVES

CONFERENCE SUPPLEMENT
TO CIO MAGAZINE

La Paloma
Tucson, Arizona
March 7-10, 1993

CIO PERSPECTIVES SERIES

IT Assets: Balancing People, Property & Performance

Getting Your Assets
in Gear

The Era of Human
Capital

Achieving a Global
Geofinance Vision

The Virtual Corporation

Benchmarking & TDQM

Intellectual Assets





CONFERENCE SUPPLEMENT

Conference Overview

Joe Levy and Lynda Rosenthal

Getting Your Assets in Gear

An article about a business world hungry for payback and profit.

Agenda

Annotated information about each session and scheduled activities.

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Conference Overview

If you are a CIO, senior IT executive, technology investment counselor, CFO, corporate or business development strategist, COO, corporate counsel, asset manager or company president or chairman, you will want to attend this program.

When organizations define their asset bases, they don't traditionally consider people or information technology as part of the formula. Yet these two components are the key differentiators between viability and extinction. Information technology is essential to an organization's critical asset goals. In fact, IT must be a core component of business practice, one of the "big rules."

The next CIO Perspectives conference, **IT Assets: Balancing People, Property & Performance**, addresses the combination of people and non-traditional property, integrated for peak performance. Jim Wetherbe, director of MIS research and professor of MIS at the University of Minnesota's Carlson School of Management will moderate the program.

Our presenters will draw a fusion map, show us how to perform a triple management feat and examine re-engineering and benchmarking. International managers will bring other cultures to the podium. CIO's editor-in-chief will lead a panel on the CIO as an IT asset. We'll discuss human capital, getting maximum value from all your assets, and the 21st century corporation.

Our corporate hosts will provide an array of concurrent sessions on best practices, maximizing software investments, client/server, TDQM, optimizing human assets and employee satisfaction, technology acquisition channels, workgroup computing and open systems. The concurrent sessions will be repeated three times.

To join us at the wonderful Tucson resort, La Paloma, and immerse yourself in a three-day discussion of IT assets, complete the enrollment form on the back cover and fax it to us at 508-872-0618. Or call us and we'll be happy to take your information over the phone.

Regards,

Joseph L. Levy
President & Publisher
CIO Publishing, Inc.

Lynda Rosenthal
Vice President & General Manager
Executive Programs



Getting your assets in gear

Companies that fail to make the most

of their IT and human resources might

as well be sewing money in a mattress.

Smart CIOs will maximize the value of

those assets through careful tracking

and creative deployment.

BY ALLAN E. ALTER

How can I best use the assets I control to boost my company's performance? All managers must ask themselves this question, whether they are in charge of a major manufacturing operation or the mail room. But in the 1990s, the CIO's answer is the one that matters most.

Structural changes in the world economy are elevating organizations' IT assets to a new level. CIOs are playing for higher stakes than ever before, because the chips they control are worth more. Robert B. Reich, the Harvard University political economist, author of *The Work of Nations: Preparing Ourselves for 21st Century Capitalism*, and adviser to Bill Clinton, contends that information technology professionals will play a leading role in corporate life.

"The successful corporation will be organized around people and information technology in much the same way that a successful manufacturing corporation 50 years ago was organized around capital assets," said Reich.

"Human resource managers and information technology professionals will be in leading positions. The corporation of the future will be defined by the quality of its people and technological infrastructure."

The reason, said Reich, is that few industries still present significant barriers to new players, in part because "new technologies allow easy entry into industries and markets. The high-volume standardized production systems of the past can now be replicated anywhere around the world." That leaves human resources as a company's key differentiator. "Human capital, in the form of those who identify and solve new problems, will create competitive advantage," he explained. "The future corporation, in effect, will be an 'idea factory' in which the latest insights and inventions around the world are continuously applied to solving new problems of customers and clients."



The corporation of the future will be defined by the quality of its people and technological infrastructure."

ROBERT B. REICH

Only one IS executive out of five can say what IT assets they have. One out of 30 knows how their assets are changing. Only one in 100 can say anything about the quality of their asset base."

HOWARD A. RUBIN

IT professionals will enable their company's human resources to solve customers' problems. "Technologies will allow such a broad array of possible solutions that the responsibility of the new corporation and its agents will be to help counsel customers about their own needs," said Reich. "This relationship is directly analogous to that of a decorator or architect, who helps clients understand not only what is technologically available, but also what they really want and need."

According to Bill Davidow, author of *The Virtual Corporation: Structuring and Revitalizing the Corporation for the 21st Century*, the increasing demand for speed is one of the principal problems on which technology will be brought to bear. Customers want what Davidow calls "virtual products and services"—quality delivered immediately. For example, people are no longer content to just buy eye glasses or cars; they want eye glasses delivered in 60 minutes and cars built to order and delivered in a few days (as is now done in Japan). Virtual corporations will need IT to swiftly design and build products, create new business processes, and track changes in their markets and in their customers' tastes.

Twenty-first-century capitalism will provide IS executives with extraordinary opportunities to contribute to their organization. But how can CIOs derive maximum leverage from their IT assets?

One way is to treat them as intellectual assets. The Skandia Group, a multinational financial services and insurance company, headquartered in Stockholm, Sweden, has appointed a "director of intellectual capital." The role of Leif Edvinsson is to identify and make the most of Skandia's intellectual assets: the experience and knowledge of its employees; the information it possesses about its products, customers and markets; and its organizational

structures, business procedures and information systems. "IT helps by capturing experience or organizational [processes] and transporting skills through networks between business units around the world," said Edvinsson.

One example of how Skandia capitalizes on intellectual assets is a system that enabled it to get a new branch in Berlin up and running in six months, instead of the company's usual two years. Known as "the Prototype," the system contains all the technology and information on business processes and other areas required to start up a new office. The Prototype provides Skandia's agents with descriptions of the company's financial products and administrative procedures; it also provides expert systems to help guide day-to-day operations and the networking capabilities needed to connect new offices with Stockholm. Edvinsson believes the Prototype will help Skandia maintain its growth rate of 40 percent and expand its markets.

Another company finding innovative ways to leverage its IT and human assets is Toronto-based mortgage lender FirstLine Trust. Nearly three years ago the new CEO flattened FirstLine into just three layers and restructured the company into cross-functional teams called "pods." Each pod was given responsibility for conducting business in a region of Canada, or undertaking an important task. One task was to design an efficient, "right-sized" corporate information system to support FirstLine's new business structure. A multi-functional pod, joining users from all departments with IS staff members, created the new, PC-based system.

Janet Wilson, FirstLine's vice president of information technology, found the boundaries between IS staff and users had to dissolve somewhat for the effort to work. "In this PC environment users have to get involved and become fully

knowledgeable about the system," she explained. "And it became even more necessary for IS people to become business people so they could understand what was going on."

While the transition was not problem-free, the result has been lower IT costs and higher productivity. Total IT cost per mortgage processed has declined from \$120 to \$66. Loan approvals now take less than 24 hours. Mortgage-processing staff process 40 applications per person per month, up from 22. IS staff productivity has also increased—it now takes three days instead of four weeks to implement a new mortgage product on the system.

Innovative thinking about how to deploy IT assets is important—but CIOs must also track their assets, and few IS organizations do this, according to Howard A. Rubin, a professor of computer science at Hunter College in New York, and the founder of Howard Rubin & Associates in Lexington, Mass.

"Only one IS executive out of five can say what IT assets they have," said Rubin. "One out of 30 knows how their assets are changing. Only one in 100 can say anything about the quality of their asset base." Most of the IS executives Rubin has surveyed don't even know the replacement value of their systems, let alone their business value. These CIOs are in a poor position to analyze how their IT assets provide real business value and contribute to the success of the organization.

So how can CIOs best use the assets they control to boost their company's performance? Focus on ways to solve their customers' problems. Support innovative methods for making the most of their companies' human assets. And measure and track the IT assets under their stewardship. Exciting work? Yes. Difficult? That too. But no one ever said high-stakes poker was easy.

Skandia's growth requires that we cultivate and capitalize upon intangible [intellectual] assets. IT helps by capturing experience or organizational [processes] and transporting skills through networks between business units around the world."

LEIF EDVINSSON

Making the most of IT

Are you taking these steps to turn IT from overhead into an asset?

Create better business processes. Business-process redesign, reengineering, total quality management, virtual enterprises, concurrent engineering—all require IT to revamp the way enterprises work.

Demonstrate the ROI on technology assets. IT must also be perceived as an asset by top executives. ROI analysis, especially when it demonstrates hard dollar gains or savings, helps CEOs see IT as an asset.

Focus on the customer and the market. Internal processes are important, but to maximize performance, companies need systems that provide information on markets, customers, and competitors.

Help management make better decisions. Executives want systems that can distill mountains of data into gold nuggets of useful information for decision-making.

Increase the value of your human assets. People are a company's greatest differentiator, according to Robert Reich, the Harvard University political economist and author.

Track your IT assets. It's difficult for CIOs to determine how IT contributes to the business if they don't not know what their IT assets are and their worth, said Howard Rubin, president of Howard Rubin & Associates in Lexington, Mass.

Treat information as an asset. By treating information as intellectual capital, companies can turn information, processes, and technology into an exploitable asset.

CIO Perspectives Series

IT Assets: Balancing People, Property & Performance

March 7-10, 1993

Paloma
Tucson, Arizona

AGENDA

SUNDAY, MARCH 7

2-6:00 pm

Conference Registration

7-9:00 am

Networking Reception

9-10:30 pm

**Dessert & Coffee hosted
by Racal-Datacom**

MONDAY, MARCH 8

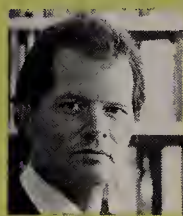
7-8:00 am

Breakfast

8-9:05 am

**Welcome & Opening
Remarks**

Joseph L. Levy
*President & Publisher
CIO Publishing, Inc.*



Conference Moderator:
Jim Wetherbe
*Director, MIS Research
Center & Professor of
MIS Carlson School of
Management,
University of Minnesota*

Jim Wetherbe will kick-start the conference with some context-setting remarks on IT assets.

Achieving Peak Performance Through Networking People and Technology

Jim Wetherbe
*Director, MIS Research Center
& Professor of MIS
Carlson School of Management,
University of Minnesota*

Competitive pressures have increased the need for organizations to optimize the performance of **all** assets. Some organizations over-emphasize systems, ignoring people. Other enterprises do focus on human issues neglecting the necessary infrastructure to support the people.

Jim will explore how computing technology has moved from hierarchical mainframe approaches to network-based, flattened organizations. Achieving this transition is the key to optimizing assets. Techniques lag behind technologies. One concept is to use software tools to customize motivational reward systems for employees. MOTIVATOR™, one such tool, will be available for participants to develop and assess their own motivational profile. To flourish in the 21st Century, the successful organization of the future will leverage human, hard and intangible assets.

9:05-9:55 am

I'm Their Leader: Which Way Did They Go?



Kathy Brittain White
*Vice President
Corporate Services
Guilford Mills*

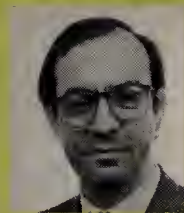
In today's tough business climate, close scrutiny by senior management and the pressure to produce more with less make the CIO's position one of the most difficult in the organization. In response, CIOs must accomplish a triple management feat. They must manage their relationship with top executives. They must manage their MIS staffs so as to maintain morale, foster innovation and improve productivity. And they must manage themselves, in order to ensure survival. This session deals with all three issues, highlighting research conducted in Fortune 500 companies.

9:55-10:25 am

Coffee Break

10:25-11:15 pm

Using IT to Achieve a Global Vision in Geofinance



Jean-Paul van Keirsbilck
*General Manager
Processing &
Automation
Kredietbank (Brussels)*

In the 1980s, Brussels-based Kredietbank began to realize its vision of becoming a global bank with a presence beyond New York and London. But the pace of change in the financial global village made a new approach to international banking necessary.

In response to these changes, Kredietbank adopted an IT system that supports the critical requirements for interorganizational dealings and risk management. An International Banking System (IBS) was also developed. This technology-enabled, fully integrated approach to geofinance has given Kredietbank an important competitive advantage.

11:15am-12:05 pm

The Virtual Corporation: Landscape of the Future



Bill Davidow
General Partner
Mohr Davidow Ventures

It is becoming increasingly obvious that the very nature of business is information. The explosive advance of technology, new forms of information, thinking machines—all are propelling traditional businesses to become virtual corporations, producing virtual products and services. Seamless enterprises will produce mass customized products instantaneously in response to customer demand. This process will radically redefine what it means to be a business leader, an employee and a customer in 21st-century America. And new challenges in harnessing the power of information processing will put IS executives in the spotlight as never before.

12:05-1:30 pm

Luncheon

1:30-6:30 pm

Networking & Concurrent Sessions

Optional concurrent session and recreational activities are available

2:00 pm

Concurrent Sessions

6:45-7:30 pm

Reception

7:30-9:30 pm

Dinner

TUESDAY, MARCH 9

7:00-8:00 am

Continental Breakfast

8:00-8:50 am

Benchmarking to Find Hidden IT Dollars



Dr. Howard A. Rubin
Professor & Former
Chair, Department of
Computer Science
Hunter College of
the City University of
New York

Currently, 80 percent of IT organizations are facing budgetary pressures. This change in funding is chiefly caused by the perception that IT is a "black hole" drawing in resources, energy and dollars. Meanwhile, little is understood about what value the business is getting from its investment. Few IT

organizations know anything about the quality of their software asset base or its size, or can quantify the growth of "flux" from year to year. Yet such information can be used to find the funds internally for reengineering and renovating internal processes and the entire systems infrastructure. By benchmarking both processes and products, CIOs can rechannel, redirect and redeploy 25-50 percent of the enterprise's IT investment immediately.

8:50-9:40 am

Downsizing During Rapid Growth



Janet Wilson
Vice President
Information Technology
FirstLine Trust
(Toronto)

Managing a downsized IT environment is especially challenging when an organization is undergoing rapid growth—from about \$1 billion to \$3.6 billion in administered assets in less than three years. This session will explore moving from out-sourcing on a midframe to in-house development; why using the right client/server technologies can deliver competitive and cost-cutting advantages; building an IT staff that understands the business; matching IT resources to a constantly changing market; and the importance of in-house R&D.

9:40-10:10 am

Coffee Break

10:10-10:55 am

Capitalizing on Intellectual Assets



Leif Edvinsson
Director of Intellectual
Capital
Skandia Group
(Stockholm)

Invisible assets play a growing role in the development of companies. Intellectual capital, including applied experience, organizational technology, and professional and intercultural skills, exists as both human and structural capital. Increasingly,

people are becoming aware that these hidden, frequently soft assets, can be systematically handled so as to generate visible financial capital. Transforming intellectual capital into a powerful competitive tool requires that intangible assets be identified, cultivated and capitalized upon, with an eye toward future growth. IT is a strategic tool for capturing experiences and organizational processes and then transporting them through a network to business units around the world.

10:55am-12:15 pm

Positioning the CIO as an IT Asset



Moderator:
Marcia Blumenthal
Editor-in-Chief
CIO Magazine



Panelists:
Rod Monahan
Vice President
High Technology
Group Practice
Paul R. Ray & Company



Eugene C. Nees
Vice President
Executive Staffing
The Dun & Bradstreet
Corporation



David J. Robino
Senior Vice President
Human Resources
Nielsen Marketing
Services



Susan Tracy-Wheeler
Managing Partner
Wheeler Associates

What skills, characteristics, experiences and business perspectives do top-executive recruiters, human-resource executives and CEOs seek in top IS professionals? What changes have taken place in the job market? How should IS professionals manage their careers? How important are such hot topics as outsourcing, decentralization, distributed computing and business-process reengineering? How much emphasis is being placed on

technical, personal and business-solving skills? How should IS executives position themselves as a strategic asset in their organizations? This panel will provide perspective on the qualities that businesses consider critical in IT executives today. Using case studies, it will examine the search process, executive assessment, success strategies and myths.

12:15-1:30 pm

Luncheon

1:30-3:00 pm

Concurrent Sessions

A Funny Thing Happened on the Way to Client/Server



Frank Gens
Vice President
IDC/Technology
Investment
Strategies
Corporation

Many organizations are turning to client/server, which promises to deliver low-cost, flexible and easy-to-use business systems while leveraging massive corporate investments in PCs and LANs. But a client/server backlash—born from the frustrating experiences of some early adopters—is quietly starting to build.

Citing the real-life experiences of early adopters, this talk will address key questions for corporations building the next generation of business systems. For what classes of application are today's client/server technologies most appropriate? What are the true costs and paybacks? Who funds development and ongoing support? And how does IS organize to support them?

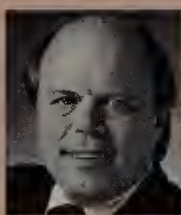
Asset Reuse: Optimizing Your Capital Investment in Software



Dr. Keith Short
Director of IEF
Research
Laboratory &
Research Director
JMA Information
Engineering Ltd.
Texas Instruments

The reuse of software assets promises the combination of improved quality, lower costs and increased productivity of IS people involved in system development. Effective delivery of this vision requires that methodologies for business-process engineering be exploited in an integrated way. Software assets recovered from existing systems can be combined with new components identified by Information Engineering to construct systems for newly reengineered business processes.

Redistributing Workload through the Enterprise



Leon Williams
Vice President
Worldwide Field
Operations &
Information
Resources &
Vice President
SunIntegration
Sun Microsystems

Within the next 18-24 months, Sun Microsystems plans to have its own computing requirements run exclusively on its line of client/server products. The company has an architectural plan and a strategy to redistribute many of its applications throughout the enterprise. Executives are concerned about reengineering processes and choosing platforms that will provide the best business results. Sun has reduced its own build-and-bill cycle by 100 days in the last three years, generating an additional \$700 million. This session will review Sun's systems-design and -delivery issues, business challenge, business-process architecture, and projects and tools the company employs as a successful Unix system manufacturer.

The '90s: A New Era for Business



Doug Michels
Executive
Vice President &
Co-Founder
SCO

The increasing competition, accelerating change, pervasive consumerism and massive market shifts of the '90s are bringing about a new era for business. And a new business model is emerging that emphasizes consumer needs, flexible organizations, competitiveness, alliances and information as the strategic weapons. IS decision makers are challenged to be flexible, meet varied user requirements, preserve investments in legacy systems and rely on multiple vendors. Open systems and standard components are the key elements of new-era computing strategies.

Ten Key Ways to Leverage Your People



Patricia Chrystycz
Director Network
Management
Systems Marketing
Racal-Datacom



Robert Decker
Vice President
Network
Management
Systems
Racal-Datacom

Most IS professionals are familiar with optimizing service levels using computer and network-management systems. But how many are aware that these systems can also be used to optimize their human assets? With personnel expenditures accounting for an average of 28 percent of IT budgets, and with the cost of dependable, technically-capable employees continuing to increase despite high unemployment levels, seeking ways to leverage the human component of the IS budget is more critical than ever. This session will examine 10 key ways to leverage the people component of the IT equation.

IT: The Human Resource Challenge



David J. Robino
Senior Vice
President,
Human Resources
Nielsen Marketing
Services

Successful technology companies are those that satisfy customers and deliver value beyond measure. The primary driver of customer satisfaction is employee satisfaction. Strategic human-resource management is the backbone of employee satisfaction and helps companies produce products better, faster and less expensively. The IS challenge of the '90s is to develop an innovative human-resource plan that focuses resources on activities that produce value for the client. Such a plan helps companies develop competitive leadership in technology and customer service.

The Cornerstone of the New Enterprise Windows NT

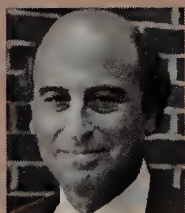


David Thacher
Group Product
Manager, Corporate
& Network Systems
Business Unit
Microsoft
Corporation

The new imperative of IS is to make the full range of today's information systems coherent on an enterprise scale. The cornerstone of this evolution is the operating system. With more than 12 million copies in use and growing, Microsoft Windows has been effectively established as the strategic operating system, scalable within and across architectures and extensible to new technologies. Microsoft Windows NT operating system combines ease-of-use and broad application support of the Microsoft Windows operating system and the advanced capabilities of a new high-end

operating system, supporting MS-DOS, Windows and 32-bit Windows-based applications, as well as OS/2-character-based and POSIX-compliant applications. The Windows strategy can address client-server computing in a way no other operating system or hybrid combination can.

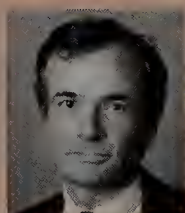
Managing People, Products, Ideas & Property through Workgroup Process Systems



Gene Cort
Vice President
Information Systems
& Support
Lotus Development
Corporation

The architecture of the '90s must integrate structured data from mainframe, mini and PC-based transaction systems, store it in "data warehouses" and deliver it to the managers' desktops. Lotus' IS department has developed a state-of-the-art management information system that gets IS out of the report-writing business and keeps Lotus executives informed.

A Methodology for Setting Breakthrough Objectives



Stephen Hamilton
Strategic Consulting
Organization
Computer Systems
Organization
Hewlett-Packard

As a CIO, you are under increasing pressure to demonstrate how your IT investments affect your company's business results. This session will provide a methodology to directly link IT investments to the achievement of breakthrough objectives. Case studies will be used to illustrate the effectiveness of this approach and the role of IT as a catalyst.

Total Data Quality Management (TDQM): Zero Defects Data Capture



Ann Marie McGee
Director
Strategic Marketing
Fujitsu Personal
Systems, Inc.

Pen technology presents a real opportunity for field-data capture systems that can improve data quality and change the way a company does business. Many potential users of pen-based systems have installed pilot projects for field-data capture, yet have either failed to connect or lacked the tools to improve data quality at the point of origin—data entry by the end user. Systems for field-data capture typically require the deployment of large numbers of units; the total dollar investment can be staggering. Total Data Quality Management (TDQM) provides the tools for determining ROI for the project, measuring data quality and quantifying the impact on corporatewide IS.

Client/Server: IT Evolution & Revolution



Tom Nenninger
Division Vice
President, Technical
Architecture
EDS

While much has been said and written about client/server technology, the real challenge of this IT tool is to help customers make the leap from a transaction-based mind-set to one focused on business event- and knowledge-based solutions. What's evolutionary about client/server is an increased focus on networked distributed processing. What's revolutionary is new technologies and human interfaces. This session will explore how client/server is being used successfully to empower end users and to improve business operations.

Many Choices, Many Channels: The Best Way to Acquire Desktop Technology



Dennis Schneider
Director Marketing,
U.S. Desktop
Business
Digital Equipment
Corporation

Companies acquiring desktop technology in the '90s have more choices than ever before. They also have more reasons to question and rethink current strategies. For example, is the company's IT strategy of the '80s aligned to take it through the '90s? Is the technology it standardized on in the '80s appropriate for the '90s and beyond? Are current buying channels as effective as they could be? A checklist will help IS executives evaluate their organizations' current desktop-technology acquisition strategies.

The Ten Musts in Moving to Unix



Alan Paller
Head of Unix
Strategies,
Computer
Associates

The siren song of Unix-based computing is powerful: eight-to-one advantages in price performance over mainframes; its status as the only "open" operating system; throughput to allow LANs to serve the whole enterprise; and thousands of new applications. Yet the path to Unix is strewn with frustration and failure. This session reviews the 10 biggest challenges IS executives face in making the move and offers advice based on dozens of case studies of large corporations and government agencies.

IT Best Practices: Managing IT In the Future

Paul Kanneman *Principal*
David Howe *Principal*
Booz Allen & Hamilton

Balancing people, property and performance is not an easy task and is becoming increasingly more difficult. As a result of several global benchmarking assignments and the 1992 CEO/CIO Survey, Booz Allen has developed some theories about IT best practices that—applied correctly—can help organizations make the most of all their IT assets. Participants will perform a self assessment so they see where they stand in relation to IT leaders on an array of "best practices." The ways to make best practices work in individual organizations will be identified.

2:15–3:00 pm

Concurrent Sessions Repeated

3:00–3:30 pm

Coffee Break

3:30–5:30 pm

The Era of Human Capital



Professor Robert B. Reich
Kennedy School of
Government
Harvard University

The man Bill Clinton chose to be his economic transition chief says the only way to keep America strong is to invest in the assets that cannot be moved. "In the emerging global economy, the only economic asset relatively immobile is a nation's people—their education and skills, and the communication and transportation systems linking them together." Not just a moral imperative, Reich believes the best means for getting the national economy to grow is to "...shift from 'trickle-down' economics premised on financial capital to 'grassroots' economics based on human capital."

5:30–6:30 pm

Reception with Professor Reich

WEDNESDAY, MARCH 10

7:00–8:00 am

Continental Breakfast

8:00–8:50 am

Marketing, Technology & Change



Regis McKenna
Founder &
Chairman
Regis McKenna Inc.

In today's market, economic, technological and social changes are affected, dramatically and transparently, by the new forces of IT. Most of today's business practices are based on organizational concepts and views of marketing and the customer that were formed in the age of producer-controlled mass production and consumer manipulation. IT has turned the corporation and society inside out, creating both confusion and new perspectives. New technologies are changing the way products and services are designed, produced and delivered, as well as the habits and attitudes of consumers. Given these conditions, the very substance of marketing must change.

8:50–9:40 am

Mining Silver, Molding Bullets, Building Guns & Training Marksmen



Jim Stikeleather
Director of Systems
Development
Kash 'n Karry
Food Stores

Kash 'n Karry Food Stores has been involved in a complete reengineering of its information infrastructure. The goals of this new architecture are to provide a single repository of information; to significantly reduce the need for an IS department; to give employees immediate access to information; to relieve employees

of recurring or procedural decision-making; and to allow them to focus on analysis, planning, creativity and exception-handling. This session will examine the results of the process and will discuss the company's experience with object-oriented, logic and functional programming and an assortment of CASE tools and methodologies.

9:40-10:10 am

Coffee Break

10:10-11:30 am

Good is the Enemy of Best



James M. Eaneman
Vice President
Mission Division
Pacific Gas &
Electric Company

A dynamic environment involves the near Herculean task of building shareholder value while simultaneously raising service quality levels and reducing overhead costs. Success is possible through the application of the leadership trinity, the linkage of an organization's strategy to structure to culture. This approach has been used successfully in organizations ranging from Milliken to Motorola. It is a common sense practice in which managers empower themselves and their people, benefit from everyone's full creative excellence, and achieve world class results. Eaneman's philosophy of "good is the enemy of best and best is the enemy of better" has been highly successful at several of PGE's major operating units.

11:30-12:00 am

Summary

T U C S O N ' S

La Paloma

Surrounded by Sonoran desert gardens and natural rock formations twenty-nine hundred feet above sea level, La Paloma is one of the premiere resorts in America. Nestled against the Santa Catalina Mountains, the resort has twelve tennis courts, indoor raquetball, a Nautilus and a personal services center. Jack Nicklaus designed the golf course, which has been named one of the "Top 75 Resort Courses" in the country.



Companion Program

Schedule

Sunday, March 7

7-9 p.m.
Networking reception

Monday, March 8

9-10 a.m.
Companion Breakfast

12:30-1:30 p.m.
Luncheon
with Conference Participants

1:30-5:30 p.m.
Biosphere II

6:45-7:30 p.m.
Reception

7:30-9:30 p.m.
Dinner

Tuesday, March 9

7-8 a.m.
Breakfast with participants

9:30 a.m.-3 p.m.
Arizona Sonora Desert
Museum and Old Town
Artisans

5:30-6:30 p.m.
Reception with Robert Reich

Wednesday, March 10

7-8 a.m.
Breakfast with participants

Join old friends and make new ones at an informal Monday morning breakfast for companions. Monday afternoon we will tour Biosphere II, where eight scientists have been sealed into a miniature Earth for two years. The air, food and water are sustained by seven ecological systems, including a tropical rain forest, desert, savannah and 35-foot deep ocean. "Biospherians" produce their own food in an intensive agricultural biome; they are working to better understand Earth and provide a scientific tool to work with basic ecology.

Tuesday, companions will spend the day visiting the Arizona Sonora Desert Museum and Old Town Artisans. The desert museum, located in the midst of Saguaro National Monument West, contains an internationally acclaimed zoo, botanical garden and aquarium with wildlife and plant exhibits. Over 200 creatures of the desert are showcased in the museum's open setting of desert gardens and oasis-like aviaries. In the afternoon, we'll go to the "Barrio Presidio" district, a neighborhood once situated within the walls of the Spanish Conquistadors' fortress. The historical Old Town Artisans building houses works by local artists and the arts and crafts of the Southwestern Indian tribes.



Corporate Hosts

BOOZ ALLEN & HAMILTON

Booz Allen & Hamilton is a global management and technology consulting firm dedicated to helping senior executives improve the performance of their institutions. Following the firm's Strategy-Driven Systems approach, Booz Allen

professionals combine top-down management perspective with hands-on systems integration expertise to plan, develop and implement systems that change the way clients do business.



Computer Associates International is the leading independent software company in the world. CA develops, markets and supports integrated systems management, information and business applica-

tions software for a broad range of mainframe, midrange and desktop computers. CA serves the international marketplace through offices in 26 countries.



Digital Direct is the leading worldwide supplier of networked computer systems, software, and services. Digital pioneered and leads the industry in interactive, distributed and multivendor computing. An international company, Digital does more than half its business outside the United States, developing and manufacturing products and providing customer services in the Americas, Europe, Asia, and the

Pacific Rim. Digital offers a full range of desktop, client/server, production, and mainframe systems for multivendor computing environments. Applications include transaction processing, data management, telecommunications, finance, realtime data acquisition and control, vector processing, education, publishing, manufacturing, software development, and health care.



TAKE ADVANTAGE OF CHANGESM

EDS is a leader in applying information technology to the needs of businesses and governments worldwide. Dallas-based EDS has spent 30 years helping customers achieve their business objectives. The company provides the following services:

consulting, systems development, systems integration, systems management and process management. With operations in 30 countries, EDS has more than 70,000 employees. The company posted 1991 revenues of \$7.1 billion.



Fujitsu Personal Systems is a leader in providing solutions for field automation applications through the development of super portable palmtop, pen-based and communicating computers. Its solutions are designed to meet the needs of applications where light-weight, small form

factor and low power consumption are key. The Santa Clara, California-based company, a wholly owned subsidiary of Fujitsu, Ltd, one of the industry's leading high-technology giants, is a pioneer in the mobile and pen-based computing arena.



Hewlett-Packard Company is an international manufacturer of measurement and computation products and systems recognized for excellence in quality and support. The company's products and

services are used in industry, business, engineering, science, medicine and education in approximately 100 countries. HP has 89,000 employees and had revenues of \$14.5 billion in its 1991 fiscal year.

Lotus®

Lotus Development Corporation, founded in 1982, provides software applications and services that meet the evolving technology and business needs of individuals, work-groups and entire organizations. During the 1980s, Lotus built its success by delivering innovative productivity tools to individuals using

personal computers. With the introduction of Lotus Notes, a group collaboration software for networked PCs, the company is delivering applications in an open workgroup environment and addressing the primary imperatives for computing in the 1990s—networking and organizational computing.

Microsoft®

Founded in 1975, **Microsoft** is the worldwide leader in software for personal computers. The company designs, develops, markets and supports a wide range of personal computer systems, applications, development tools and languages, hardware peripherals, books and multimedia applications for business and personal

use. Microsoft products are available for all popular microcomputers including IBM®, Apple®, and IBM-compatible computers, each designed with the mission of making it easier and more enjoyable for people to take advantage of the full power of personal computing every day.

Nielsen

Nielsen Marketing Research (NMR) is the world's leading marketing information services company, with offices in 28 countries. NMR is dedicated to providing customers with the highest quality information and decision support services using AI-based software, visual programming environments, EIS and ad hoc

analysis and delivery systems. From its world headquarters in Northbrook, Illinois, Nielsen supplies a wide range of services and technologies that help consumer-goods manufacturers and retailers develop insights to make better business decisions.

Racal-Datcom™

Racal-Datcom, a global union of 15 companies in 10 countries, is one of the world's leading independent providers of data communications products, systems and services. It is committed to supplying a broad range of integrated data communications technology and professional

services capabilities that positively impact its customers' business goals. Racal-Datcom is supported by its U.K.-based parent company, Racal Electronics Plc., a more than \$2.5 billion multinational firm, which owns in excess of 100 principal electronics companies worldwide.



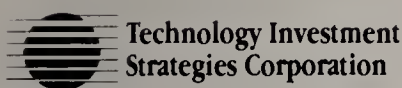
SCO is the world's leading supplier of hardware-vendor-independent open systems software environments for business on industry standard computers. A privately held company founded in 1979,

SCO ended fiscal 1991 with revenues of over \$136 million. SCO has over 1150 employees worldwide, with 13 offices in North America and 12 offices throughout Europe, Asia and Latin America.



Sun Microsystems, Inc., is an integrated portfolio of businesses that supply distributed computing technologies, products and services. Its innovative, open client-server computing solutions include networked workstations and multiprocessing servers, operating system software, silicon designs and other value-added technologies. Sun™ systems are used for many demanding commercial

and technical applications. According to analysts, Sun's products command the largest share of one of the computer industry's fastest-growing market segments: workstations and servers. The Sun Microsystems, Inc. operating companies are Sun Microsystems Computer Corporation, SunExpress, Sun Microsystems Laboratories, SunSoft and Sun Technology Enterprises.



Technology Investment Strategies Corporation helps corporate executives and managers around the world make their strategic business decisions about information technology. As a subsidiary of International Data Group (IDG), the world's leading provider of information on IT, TISC is well connected to the largest

global network of information resources. TISC draws from this vast information network, spanning 49 countries, to provide its clients with a comprehensive set of research and consulting services dealing with the most critical information technology management issues of the day.



Texas Instruments Incorporated, the I-CASE technology leader, is a high-technology company with sales and manufacturing operations in more than 30 countries. TI develops, manufactures and markets semiconductors, defense electronics systems, software productivity tools, computer systems and peripheral

products, custom engineering and manufacturing services, electrical controls, metallurgical materials and consumer electronics products. At Texas Instruments, technological leadership and persistent commitment to quality have been the keys to success.

CIO PerspectivesSM

IT Assets: Balancing People, Property & Performance

Westin La Paloma, Tucson, Arizona • Sunday, March 7 through Wednesday, March 10, 1993

Please complete this form in its entirety. Thank you.

Last name _____ First name _____

Title _____

Company _____

Address _____ Mail stop _____

City _____ State _____ Zip code _____

() ()

Phone _____ Fax _____

What is your industry? _____

Your name as you want it to appear on your badge _____

Name of companion (if attending) _____

Additional Company Enrollment

The following people from my company also plan to attend:

Last name _____ First name _____

Title _____ Mail stop _____

() ()

Phone _____ Fax _____

Name of companion (if attending) _____

HOTEL ACCOMMODATIONS

A block of rooms has been reserved at the Westin La Paloma. We urge you to make your reservations early by calling the hotel at 800-876-3683. Be sure to identify yourself as part of the CIO conference to receive the conference rate. Hotel reservations/cancellations and charges are your responsibility, except for government/military participants.

ATTIRE

Casual! Please, no suits, ties or business attire!

TRANSPORTATION

American Airlines is the official conference carrier. Call American at 800-433-1790 and reference Star File #S1833D4. AVIS is the official car rental provider. Call AVIS at 800-331-1212 and reference B766657. Shuttle bus transportation is available from Tucson airport.

CANCELLATION

You may cancel your enrollment up to 2-26-93 without penalty. No refund or credit will be given for cancellations received on or after 2-27-93. You may send a substitute in your place.

PAYMENT INFORMATION

- ☐ Check enclosed ☐ Bill company
☐ P.O.# _____
☐ Credit card ☐ AMEX ☐ VISA ☐ MC

Card # _____

Expiration date _____

Signature _____

FAX, CALL OR MAIL

Fax 508-872-0618 • Call 800-366-0246

Attn: Elizabeth Ladendecker

Or mail form to: CIO Magazine

492 Old Connecticut Path

Framingham, MA 01701

ENROLLMENT FEES

Please include your business card.

- Prior to January 15, 1993

IS Practitioners/Executives: If you are a CIO, IS executive or hold another executive position, the fee is **\$1,095**

Government/Military: The fee, which includes your hotel for three nights, is **\$1,495**

- On/after January 16, 1993

IS Practitioners/Executives: If you are a CIO, IS executive or hold another executive position, the fee is **\$1,195**

Government/Military: The fee, which includes your hotel for three nights, is **\$1,595**

- **Sales/Marketing/Consulting:** If you are in a sales, marketing or consulting position, the enrollment fee is **\$5,000**

All enrollment fees must be paid in advance of the meeting. Fee includes conference sessions, concurrent sessions, corporate host displays, conference materials and scheduled food and beverage. Transportation and hotel are your responsibility.

COMPANION PROGRAM

Companions must be enrolled in this program to attend any conference-related functions. Includes all scheduled food and beverage functions, a tour of Biosphere II, a trip to the Arizona Sonora Desert Museum and a visit to Old Town Artisans. Conference session attendance not included. **\$ 275**

OTHER ACTIVITIES

Monday afternoon activities include:

- ☐ Golf Tournament **\$ 126**
☐ Tennis Tournament **\$ 74**
☐ Biosphere II **\$ 48**

THE COMPUTER BOWL IS FILLING UP.

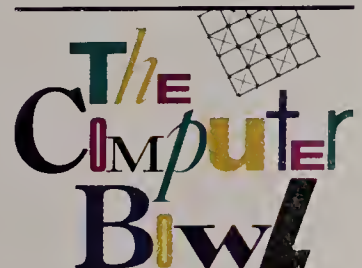


The Computer Museum's 4th Annual Computer Bowl rapidly approaches. The contestants are training hard. Sponsors are lining up. Enthusiasm is at a fever pitch. The whole world is watching. Don't wait another nanosecond. Make your ticket reservations now. The Computer Bowl is filling up. And if it's anything like last year, The Computer Bowl will soon runneth over.

The Computer Museum's 1993 Computer Bowl Presented By: The Association for Computing Machinery (ACM); Date: May 14, 1993; Place: The San Jose Convention and Cultural Facilities, San Jose, California; Satellite broadcast to: The Computer Museum, Boston, Massachusetts.

EAST COAST TEAM: Mitchell E. Kertzman, Captain, Powersoft Corporation; John F. Burton, LEGENT Corporation; Neil J. Colvin, Phoenix Technologies Ltd.; Alain J. Hanover, Viewlogic Systems, Inc.; Patricia B. Seybold, Patricia Seybold Group. **WEST COAST TEAM:** Harry J. Saal, Captain, Network General Corporation; Jean-Louis Gassée, Be Incorporated; Jerry Kaplan, GO Corporation; Michael A. McConnell, SuperMac, Inc.; Lisa G. Thorell, Dataquest Incorporated. **"THE EXAMINER,"** Bill Gates, Microsoft Corporation. **JUDGES:** Dr. David L. Nelson, Fluent, Inc.; John F. Shoch, Asset Management Company.

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As reported in this issue's "State of the Art" column, the use of presentation software to prepare professional, memorable presentations is on the rise among end users. Major improvements in presentation-software packages, along with an evolution in consumer hardware, have spurred strong market growth over the last two years, particularly for Windows-based presentation-software products.

As more people are becoming less afraid to use these products to enhance the effectiveness of their presentations, CIOs are beginning to look closely at the issue of standardization on a single presentation system for the enterprise.

Which products are the most affordable? Easiest to use? Require the least support from IS? And which products work not only with current platforms, but also with emerging technologies such as multimedia, which the enterprise may use further down the road?

These are the questions IS executives must evaluate and resolve, in tandem with user input on their requirements, before selecting a standard. To be considered by CIOs as viable contenders, vendors of these products must continually position and differentiate their offerings. And the best time to begin that communication process is *now*—before a full-fledged standards war emerges.

Wayne L. Woz

P.S. We are close to capacity for our next CIO Perspectives Conference, "IT Assets: Balancing People, Property and Performance," to be held March 7-10 at La Paloma in Tucson, Ariz. To register, please call our toll-free hot line at 800 366-0246.

Coming In CIO

The Development Triangle

Software development is a process of, by and for the people. IS managers must push new skills on their developers while downsizing staffs and increasing service. Programmers are willing to support strategic change in return for management support in motivation, education, user integration and evaluation. And users are taking responsibility for using technology effectively and are learning to work in new ways with technical people. *CIO* reports on all three corners of the development triangle.

Embracing Diversity

Assembling a single set of tools to automate the creation of business systems is an attractive goal, appealing to management's wish for standards and economy. But trying to define every development objective in terms that can be met by this orderly assemblage is a recipe for disaster.

Chicken Big

In three years, Perdue Farms has experienced a 300 percent increase in productivity and a systems-development ROI of three dollars of benefit for each dollar invested. But the mainstay of Perdue's approach isn't cutting-edge technology. Rather, it is a workforce that is made to feel "competent, rewarded and challenged."

PHOTO BY GEORGE SIMIAN

Recent events suggest the
administrative burdens of your network
could grow substantially.

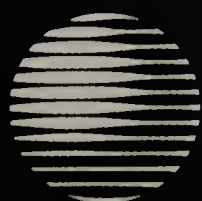


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AT&T

Network Systems

TRENDLINES

INTELLIGENT ROADS

HIGHWAYS FROM HEAVEN

Last month, Boston's Central Artery/Tunnel Project began taking bids on a "smart" traffic-management system for the new section of highway, construction of which will begin this summer. Technology that

minutes, according to Dan Krechmer, systems operations manager for the project. For instance, if there is a breakdown in the new Third Harbor Tunnel, sensors embedded in the road's surface will detect the slowing of traffic by measuring the time it takes for cars' front and rear wheels to pass over them. The system will alert operators in the control center (located at the mouth of the tunnel) and closed-circuit cameras will let them view the situation.

The system then generates a response plan that turns on a combination of lane-use signals (red X's or green arrows above the lanes) and variable speed-limit signs far enough back from the incident to allow traffic to flow around it and let a tow truck get in more quickly (trucks will be stationed at nine or 10 emergency platforms along the tunnel). The operator views the plan on a computer-generated map showing all the signs and devices that will be brought into play. "If the plan is a good one...allowing people to merge safely [around the incident], the operator presses a button and the whole re-

sponse plan is set in motion," Krechmer said.

The tunnel's ventilation system will be hooked in as well. For instance, if operators determine there will be a 15-minute delay, they can activate signs telling motorists to turn off their engines, and the system will automatically turn the tunnel's fans on high. This and another innovation—the use

of automobile-mounted "smart cards" for the electronic collection of tolls—will help reduce exhaust emissions as well.

For those who hate sitting in traffic without knowing why, an AM radio station will be dedicated to reporting on traffic conditions. The system will also be able to override all frequencies in an emergency. ■



FAST-LANE FUTURE: Boston's new "smart" highway system, on which preliminary work is underway, will reduce clog and smog for commuters.

monitors traffic flow can detect trouble spots and reroute traffic around them, increasing capacity without adding lanes.

The system is expected to clear traffic accidents and other obstructions within 15

SIX DEADLY SINS

As part of their mission to recruit new talent, head hunters are usually privy to why the old heads rolled in the first place. Personality conflicts or a failure to fit into the corporate culture are sometimes cited as reasons for a CIO's departure. But John J. Davis, president of an executive search firm that bears his name, said the complaint is more likely to be related to IT and how it is managed. According to Davis, there are six "classic" complaints about information executives:

- They don't offer a vision for the future, or they fail to enthusiastically support senior management's vision.
- They're empire builders who resist sharing technology resources.
- They don't set attainable, near-term goals when laying out a strategic direction or build in early targets as a way of measuring achievement.
- They're out of touch with their companies' business goals and seem to view information services, not profit-making, as their company's key function.
- They're inflexible and fail to solicit critical input from the business users. They lack a sense of partnership.
- They won't streamline and they oppose taking actions like downsizing and outsourcing, even when these make good business sense.

Wise information executives commit themselves to the company's bottom line by streamlining IS operations and seeking to incorporate IT throughout the organization, Davis said. "The superior IS executive will view the company's business objectives as his own." ■

THE INFORMATION INFANTRY

Business is frequently compared to war, but even the most obnoxious sales reps almost never encounter artillery fire in the field. That's why the U.S. Army felt it needed a more-than-usually rugged

notebook PC that could withstand a Kuwait-style hostile takeover.

Texas Microsystems, of Houston, has begun work on a pocket-sized Soldier's Computer under a \$500,000 contract from the Army's Communications and Electronics Command. The initial prototype will be a two- to three-pound

ruggedized notepad-type unit with touch-screen input, high-resolution display and up to 24 hours of continuous battery life. The company expects that the device will eventually shrink to a one-pound package.

The machine will initially be used for such applications as training and field maintenance of military

equipment. Later, it will help troops aim weapons, pinpoint the position of enemy forces, communicate more effectively within squads and administer medical treatment in the field. The notebooks could also permit tank crews to leave their vehicles while staying linked to the onboard computer. ■

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TRENDLINES

INFORMATION SERVICES

NEWS ON THE FLY

Just because you're out of the office doesn't mean you have to be out of touch with breaking industry news. Traveling executives can now receive up-to-date news briefs on subjects ranging from AIDS to virtual reality, delivered to portable computers over Motorola's EMBARC wireless messaging service.

HeadsUp, the result of an agreement between Motorola and Individual Inc. of Cambridge, Mass., allows subscribers to receive news on industries of their choice. EMBARC subscribers choose one or two menus from 24 categories, including computing, telecom, emerging technologies, television, electric

and nuclear energy, automotive manufacturers and pharmaceuticals. Each morning, EMBARC sends out news briefs on those topics, culled from 100 domestic and international news sources. Users who want more information can call an interactive voice-response system and request the full text of the article.

Airborne market-watchers who want to make sure their investments are still on solid ground need another type of information, and a new air-to-ground passenger communications system is providing it. FlightLink, the creation of the In-Flight Phone Corp. of Oakbrook Terrace, Ill., allows USAir passengers to view stock quotes from the NYSE,

NASDAQ or AMEX, using a handset controller and LCD view screen mounted above their food trays. Users pay for the service by sliding a credit card through the handset. The quotes are provided by Signal, a PC-based financial-information service.

And for frequent fliers who want more than just stock-market quotes, *The Latest News* brings updates on national, international and business news and sports and weather updates right to their seats. This 12-page paper publication, which calls itself "the nation's first hourly newspaper," is currently distributed on board the USAir shuttle between New York and Washington or Boston from 4 to 9 p.m. on business days, and on the American Airlines shuttle between New York and Chicago.

The Latest News is published by States News Ser-

vices and has among its sources the Associated Press, United Press International, Reuters and Knight-Ridder. Pages are sent by satellite to locations near National and La Guardia airports, where they are printed and then dispatched by truck. "We like to think of it as print radio," said Leland Schwartz, the editor and publisher. ■

NEW VENTURES

The Small Business Administration has set up a computerized bulletin board to provide business owners with free information about its services and programs, as well as information about starting and operating a company. SBA On-Line can be accessed by dialing 800 859-INFO (if using a 2400-baud modem) or 800 697-INFO (if using a 9600-baud modem).

The Microelectronics and Computer Technology Corp. (MCC) has created a spin-off company that will commercialize a new storage technology developed by the Austin, Texas-based research consortium. Tamarack Storage Devices Inc. plans to develop products based on MCC's holographic storage technology and anticipates first customer availability by the end of this year.

The Multimedia Representative Consortium (MMRC) was formed recently to provide multimedia hardware, software and peripheral manufacturers with a direct link to key distributors and resellers nationwide. The organization provides the services of an in-house sales force without the overhead expense or investment of time and money. The MMRC is headquartered in Princeton, N.J. ■

TENDER IN YEARS, TOUGH IN BUSINESS

The arrival of two baby boomers in the White House has sparked speculation on changes in everything from policy (will children's interests supplant those of senior citizens?) to trendy dining spots (will McDonalds replace Duke Ziebert's?). But the boomers' capture of the Oval Office coincides with their sweep into the corner offices of corporations nationwide. In the computer industry alone, Philippe

Kahn, Bill Gates, Jim Manzi and Michael Dell are younger than Mick Jagger. So what does this infusion of young blood mean to the body corporate?

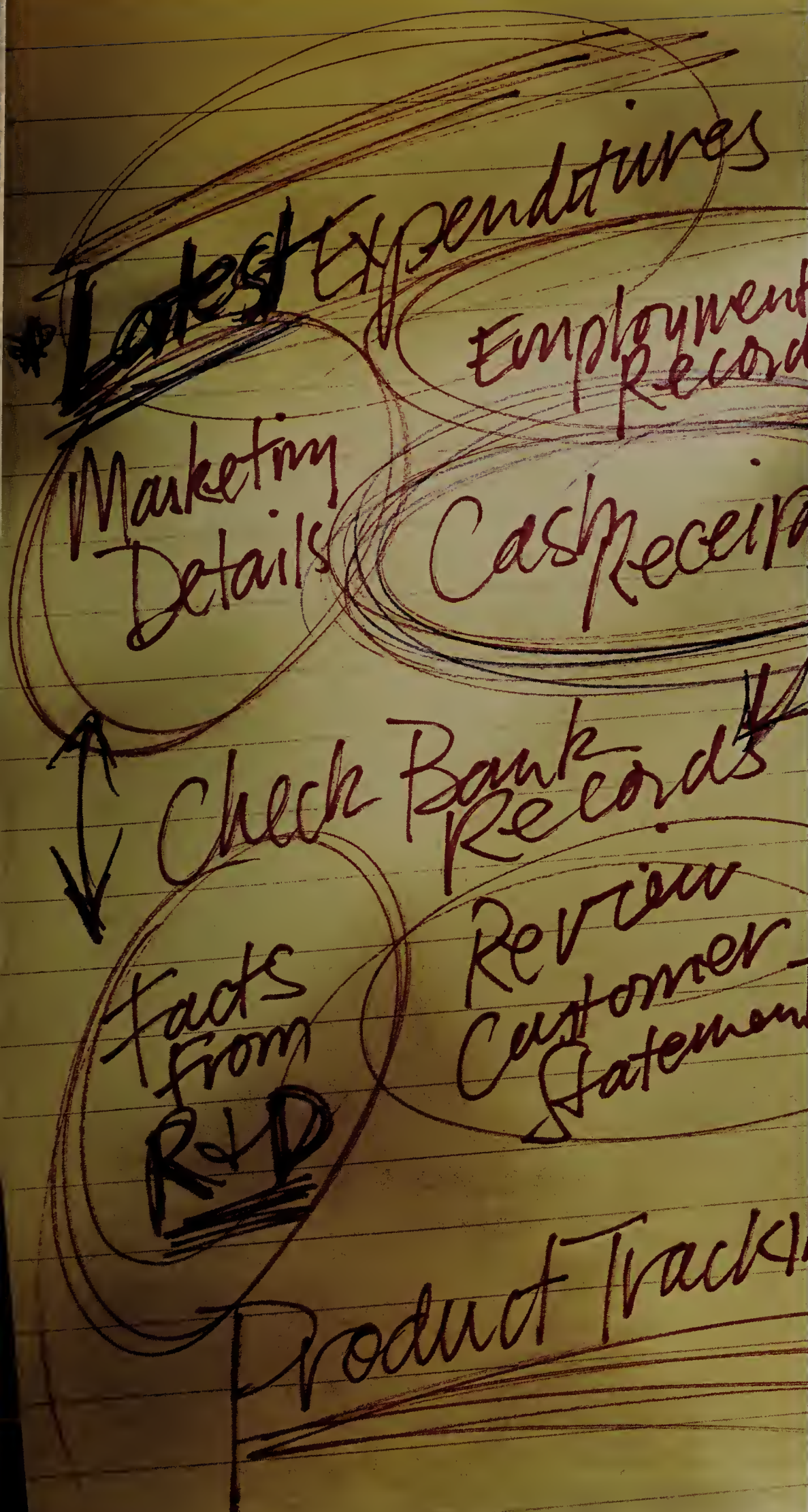
Jay Conger, an associate professor of organizational behavior at McGill University in Montreal, describes the new generation as competitive, impatient, open to

change and demanding of themselves and those around them. In *The Ray Report*, a quarterly journal for senior executives, Conger said these new CEOs "feel compelled to find greater meaning in work itself. Titles, security and cash are not as important." They are also "a much more self-reliant generation than their parents and much more willing to blame failure on the individual rather than society or some other outside force."

As a result, these CEOs tend to be less forgiving of mistakes made on the job, writes Conger, who de-

scribed the group as having high expectations coupled with an "up or out" attitude. And while most will be less paternalistic than their predecessors, they will be no less directive. "But they will do it in more indirect ways," he suggested. "And we will find them to be more cleverly manipulative than previous generations in how they use their authority." ■





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TRENDLINES

SPEECH TECHNOLOGY

MARKETS FOR NEW VOICES

The U.S. Postal Service, one of this country's greatest traffickers in the written word, is turning to speech as a solution to its sorting problems. Using VoiceTrek, a product of Tardis Technology in Long Beach, Calif., clerks can greatly speed the sorting of mail that automated equipment can't handle.

The old method for sorting

"manual" mail—mostly personal, handwritten correspondence—required trained clerks to memorize half the streets within their designated areas and look up the rest. Clerks then sorted the mail according to zone or carrier.

Using VoiceTrek, clerks simply read street names and numbers into a microphone headset. The program accesses the National Directory Support System database, which supplies the correct carrier or zone via an audio, visual or bar-code response. Clerks create voice files of their individual pronunciations; the system is not affected by accents or dialects, and it adapts to changes in the speaker's voice.

VoiceTrek, now operating in several postal facilities, has increased sorting rates to as much as 1,600 pieces per hour per employee, compared to 500 pieces per hour using the old method. The Postal Service estimates that systemwide savings could total more than \$30 million in reduced employee costs.



VOICE I.D.: A customer tells the teller who she is using voice-recognition technology.

Voice technology is also being applied to banking, although security rather than speed is the focus in that industry. AT&T and its computer unit, NCR, are working on an automated teller machine that uses voice-recognition technology and smart cards to identify card holders. (Smart cards are credit-card-sized plastic cards containing memory chips capable of storing large amounts of data. Unlike ordinary magnetic-strip cards, smart cards are difficult to reproduce and therefore less vulnerable to theft and fraud.)

Here's how the system will work: Users speak several phrases into a telephone handset to create a voice-print. Their voice-print (which is as unique as a person's fingerprints) is then downloaded onto a smart card. When a card is inserted in an ATM, the machine asks for a password and then prompts the user to say one of the stored phrases over an attached telephone. While the ATMs can detect impersonators, they are not thrown by voices affected by illness or other conditions.

The new ATMs will be piloted at a number of banks later this year. An official rollout may occur as early as 1994. ■

BIG BLUE PRINT

Ideas—the wrong ones—are what beached once-mighty IBM, wrote Mark Stahlman, a former industry analyst and now a freelance writer, in an article appearing in the December 20 *Boston Globe*. "Competition in computers is driven by ideas [not technology]," Stahlman asserted in the article. Ideas "come to life in the form of business models and ultimately become the soul of the enterprise [and] . . . separate the winners from the losers."

IBM's business model is flawed, Stahlman argued, because it rests on the assumption that there is "one computer industry with one set of business practices, one set of management principles and one unified enterprisewide computer solution." In fact, there are many computer industries—personal computers, workstations and minis, among them—each with its own set of rules and different economic structures.

Business models define the way companies organize themselves to succeed in their markets, Stahlman concluded. He recommended a new model for the ailing corporation: Dump SAA, and intensify the move to decentralized, independent business units.

A much longer version of Stahlman's piece was commissioned, then killed, by the *Harvard Business Review*. The author claims faculty members, fearful of jeopardizing IBM's financial support to the B-school, squashed the piece; the magazine says the article needed work. ■

SEEN FOR A DAY

Playing in the big leagues isn't easy if you haven't got the right equipment. While more and more large companies are laying out big bucks for videoconferencing systems, many of their smaller business partners (or business-partner wannabes) can't afford that kind of investment. VideoBooth, a pay-per-use video-conference service in Chicago, allows such businesses to be seen as well as heard—but only occasionally.

The company's new service is aimed at organizations that use videoconferencing so infrequently that even short-term equipment rentals—VideoBooth's main line of business—are impractical. The company recently

opened a Chicago showroom that operates as a kind of giant phone booth with visuals. For \$300 (\$425 after hours and on weekends), clients can conduct a conference from the site using PictureTel equipment, which offers a bandwidth compatible with a large number of corporate videoconferencing centers.

CEO Milind Lele points out that the service allows customers to try the new technology with minimal financial risk. And companies that choose to rent videoconferencing equipment can account for the trial as a monthly operating expense instead of a capital investment. ■

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EVENTS

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*The American Society for
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Implementing Client/Server Applications and Distributing Data

*Dupont Plaza, Washington
February 22 & 23*

*Digital Consulting Inc.
508 470-3880*

This seminar emphasizes the technological implementation issues of client/server computing and the effective distribution of data throughout the organization. Participants will examine the real-world problems that organizations are currently encountering and how new technologies can be successfully applied in their solution. Registration fee: \$895

IT Assets: Balancing People, Property & Performance

La Paloma, Tucson, Ariz.

March 7-10

*CIO Publishing Inc.
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This conference examines how people and information technology can be integrated for peak performance. Corporate hosts provide an array of concurrent sessions on best practices, maximizing software investments, client/server, total data quality management, optimizing human assets, technology acquisition channels and workgroup computing. Featured presenters include Jim Wetherbe, professor of MIS at the University of Minnesota. Registration fee: \$1,195.

6th International Computer Security & Virus Conference

*New York Ramada Hotel,
New York*

March 10-12

*Data Processing Management
Association
800 835-2246*

Attendees learn about the latest security/virus tools and techniques through demonstrations, shootouts and ratings. Included are case studies of toll fraud, LAN disasters, hacker intrusion and natural disaster. Attendees receive a copy of the proceedings. Registration fees: \$325-\$450.

REICH CANCELS CIO ADDRESS

Robert Reich, who was scheduled to appear as one of the keynote speakers at the CIO Perspectives Conference in March, has been forced to cancel due to new responsibilities incurred as a result of his appointment as U.S. Secretary of Labor. For information on program changes, please call 800 366-0246. ■

A BRIGHTER FUTURE FOR THE NIGHT SHIFT

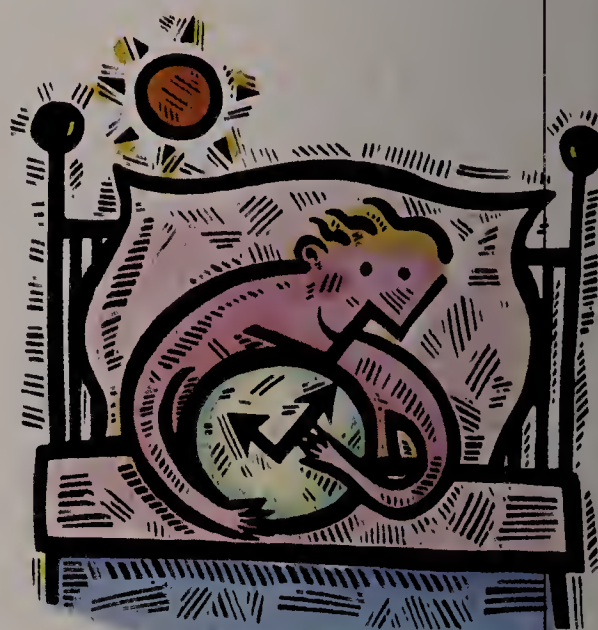
A new method for resetting the body's internal clock is throwing light on the problems of jet lag and night-shift fatigue.

The computer-controlled lighting system, from Light Sciences Inc. in Braintree, Mass., exposes night-shift workers, and others whose body clocks may be out of sync with their schedules, to specific doses and intensities of light. Research has established that exposure to light and dark is the most potent daily synchronizer of a person's biological rhythms.

At the two industrial sites where the product is being tested, employees labor under programmed overhead lights. Light Sciences has also produced a prototype visor with a light under the brim that could be used by fliers to fight jet lag. CEO Matthew

C. Weisman said he expects the company to start selling industrial systems commercially next year at a cost per installation of about \$200,000.

The company was just awarded a contract by NASA to help astronauts adapt their sleep/wake cycles to the scheduling needs of shuttle missions. The NASA system involves providing crews with recommended schedules of exposure to carefully timed bright light before launch and is designed to improve both alertness and sleeping patterns. ■



CAREER MOVES

WILLIAM G. ROWAN has been named to the new position of CIO for Unisys Corp., an information-systems supplier based in Blue Bell, Pa. Rowan joined Unisys in 1975 as controller of Canadian operations and has since held numerous positions within the company, most recently as corporate vice president and corporate controller.

Trucking company Roadway Express of Akron, Ohio, has appointed GERALD A. LONG president of its IS subsidiary, Summit Informa-

tion Systems. Long joined Roadway in 1987 as director of systems development. He became president of systems development for Summit in 1990 and vice president of the subsidiary in 1991.

DAVID ESHLEMAN has been named vice president of information services for Bearings Inc., an independent distributor of replacement bearings and power-transmission components based in Cleveland. Before his appointment, Eshleman served as a consultant, working on the company's strategic information needs. ■

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In Safekeeping

The failure to keep track of and manage software on all levels can cost an organization some serious time and money. Often what is really being squandered—people's ideas—can never be recouped.

BY RICHARD HARTER

Few people worry about losing their software. Companies that spend millions keeping track of financial investments, physical inventory and even informational resources often have no formal strategy for keeping track of the source code they write. This is truly unfortunate, since software probably represents more of the company's "core competency"—its key market and process differentiators—than almost any other asset.

Because software doesn't wear out or depreciate, people think it lasts forever. But little pieces of it are continually being lost. Either parts of it get misplaced or it becomes eroded by changes—a few lines here, a subroutine there. The cumulative impact of replacing this code is daunting, and sometimes what is really being lost—people's ideas—can never be replaced.

Software attrition is the rust eating at the post-industrial corporation. And it's not just those ancient source files that are affected. What really hurts is losing the updated product function, the new business practice or the more efficient work-

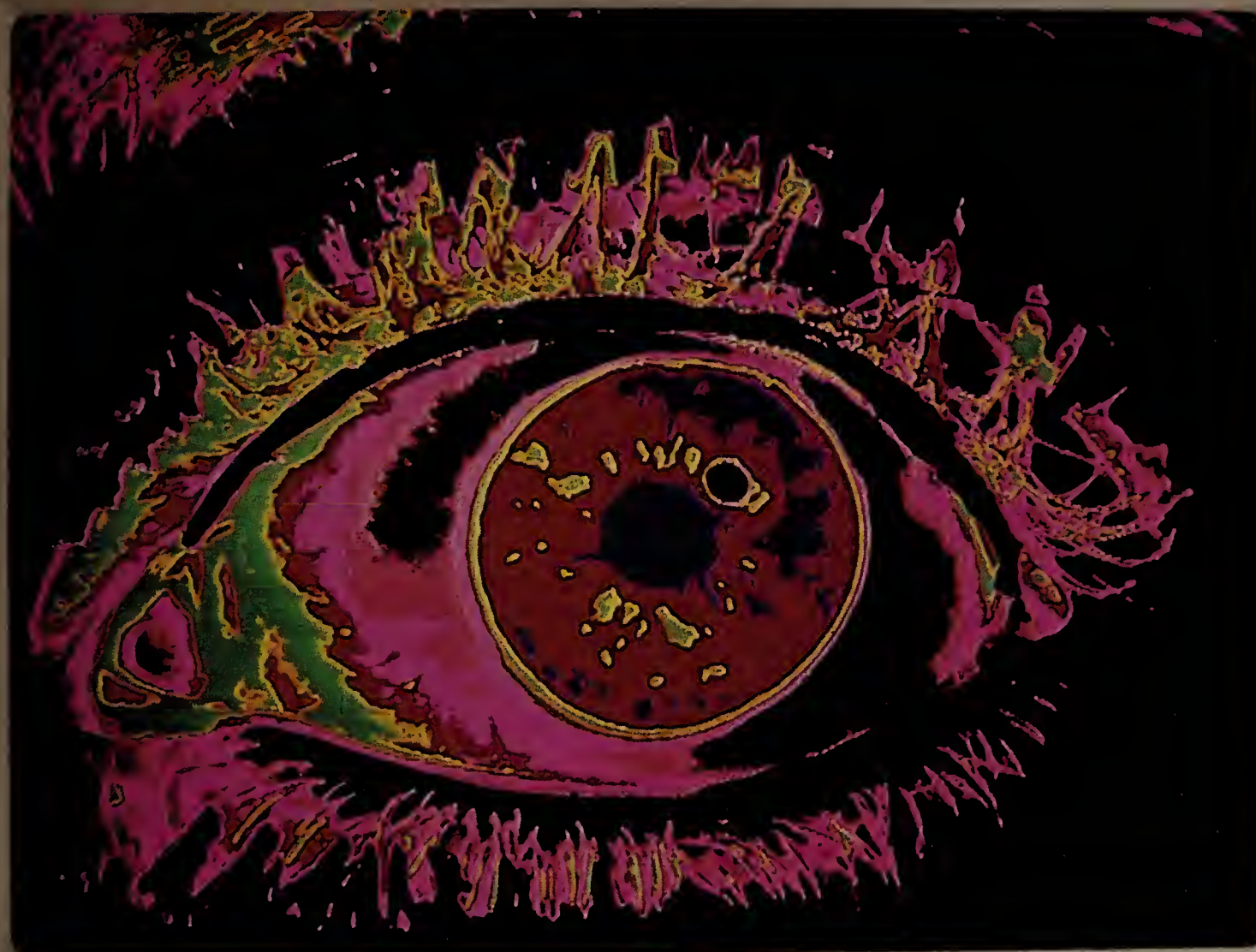
flow whose existence may have been noted by only one programmer during the week it was written. No 1950s factory plant manager would have survived if he had kept paying for the same widgets over and over again. Yet that's exactly what most of today's information executives do—replace the countless software widgets their developers can't find.

The problem is one of granularity. It may be easy to assign a mechanical assembly to a parts database along with the item's price, manufacturer, performance specs, inventory level and the names of all the products in which it could be installed. Keeping track of a "finished" software program is also relatively easy: You just find the file in a directory. (Although you still have the problem of correlating functional changes with file versions.) What's not so easy, however, is keeping track of the little pieces of programs that are reused or referenced in other programs. For the most part, these widgets are not self-contained files and are not identifiable in any directory or database. What if one of these widgets, a mere 50-line subroutine, happens to be instrumental in virtually every financial transaction your business performs? Wouldn't it be an asset worth managing?

Most software that gets lost is not the kind that is finished, filed, packaged or shrink-wrapped. As everyone who works in the industry knows, finished software is only the tip of the iceberg. Hidden beneath the surface are all the preliminary versions, unfinished modules and alternative solutions that may or may not make it into the final product. This intellectual working capital has the same value to an information-based organization as automobile subassemblies have to a



Now you can transmit the blink of an eye in the blink of an eye.

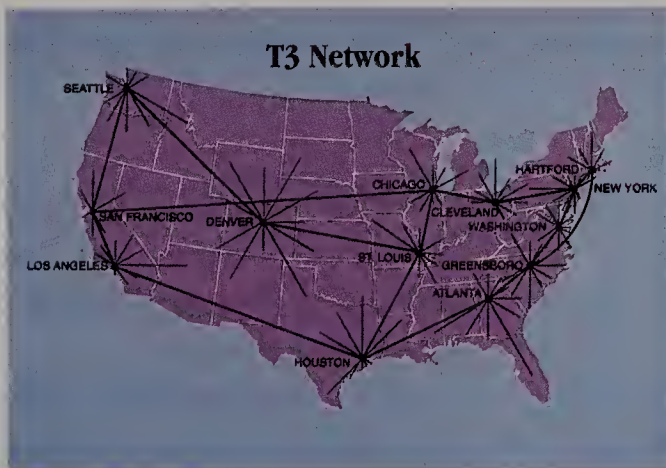


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car manufacturer. Indeed, software that designs and manufactures car engines may contain more proprietary value than the engines themselves. Both represent substantial investments that their owners would very much like to leverage in future production. Both cost money—even though, unlike nuts and bolts, software parts have no place on the corporate balance sheet.

Companies should enjoy the same flexibility when dealing with software parts that they have with hardware. Imagine what running a factory would be like if, every time a manager wanted to know what parts were in stock, where they were stored and what their specs were, he or she had to physically rummage through the stock bins. Yet that's exactly what most information executives expect of their development and maintenance organizations.

Consider the tedium of most software management. Let's say you want to know what software widgets im-

Because software doesn't wear out or depreciate, people think it lasts forever. But little pieces of it are continually being lost.

plement various tax-law changes in a corporate accounting system. First you are usually stuck looking through directories for the relevant files. (This, of course, implies that you already know what it is you're looking for, which is probably not the case. If you did, you wouldn't be scanning in the first place; you'd simply do a retrieval.) Next you search through selected files for the software parts whose functions are relevant to your tax problem. If you then want to reassign these parts to a new department—let's say purchasing—you have to manually cut and paste every module, subroutine and source line into some new file: perhaps one called "purchasing tax updates." Maybe writing new tax software would be eas-

ier after all, never mind the waste.

So how do companies stop frittering away their software? By following four principles of software-asset management:

Identify your software assets. You can't manage something you can't identify. In software, this means going beyond files as the only kind of software you know how to control. Organize your software into logical entities (the software equivalent of widgets) that are independent of the physical packages (the files) in which they are contained. Widgets are essentially objects—so what you need is an object-based software-configuration management system (SCMS). If a tax-code widget consists of three subroutines in File A, 20 lines of

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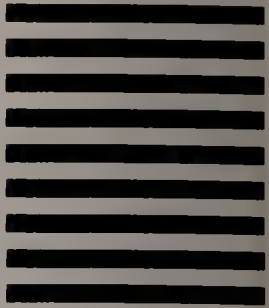
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code in File D and a program in File X, an object-based SCMS can tell you that. You can then assign a name to this collection of software so you can keep track of it. And just as a company can list price, performance and configuration information about a mechanical assembly in its parts database, it can do the same with each of its software parts.

Evaluate your software assets. The point of any good asset-management system is to recognize value. Value can be measured in dollars but also in usefulness to the organization. An object-based SCMS lets you put a price tag on everything in your software inventory. What may be more useful, however, is listing all the things that make a widget valuable, like the names of all the other widgets that need this widget in order to operate. Other dependencies could be non-software-related, such as the documentation that references this software or the strategic business systems the software supports. Software

assets with lots of dependencies have lots of value, and your listing tells the organization which assets are worth the most.

Control your software assets. Once you know what they are, where they are and how much they are worth, you may be motivated to control your assets better. Some of the questions you should ask are: Who has access to specific assets? Is there a history of changes to key assets? Can these changes be "backed out" should you want to return to an earlier state of the software? Simply knowing that there are now two different releases of a system doesn't tell you what changes were made in getting from Release A to Release B. (You only know which files were changed, not which widgets.) The company should review its software-configuration procedures to make certain such control issues are addressed.

Communicate that your software has value. The hardest part of software-asset management is cultural. Re-

gardless of what statistics say about the value of software relative to hardware, people still tend to overlook what they can't see, feel, weigh or touch. This is especially true for software assets. Nothing contains a higher portion of a company's core competency, yet nothing is less accounted for.

In the face of fast-moving competition, organizations need to nurture their competencies, not reinvent them. IS executives must make the point that the cost of continually replacing their software working capital is more than the cost of writing software. That cost includes not being able to exploit past ideas or move deliberately to meet current opportunities. ☐

Richard Harter is founder and chief technology officer at Software Maintenance and Development Systems Inc., a maker of software configuration management systems based in Concord, Mass.

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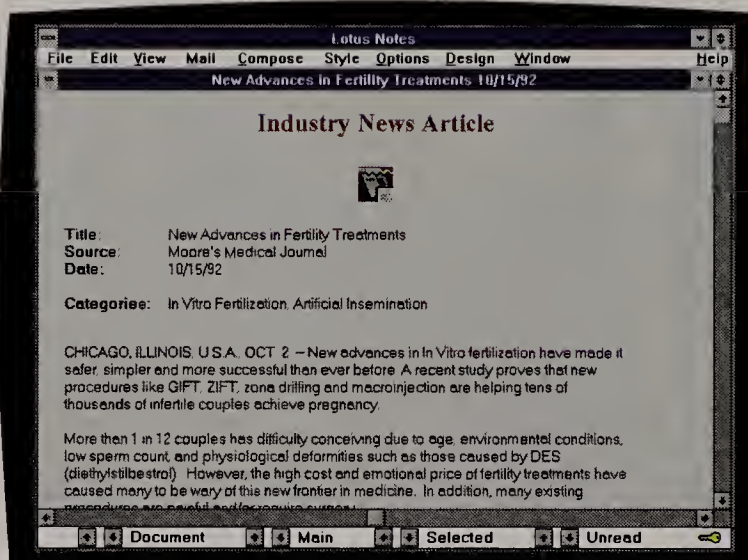
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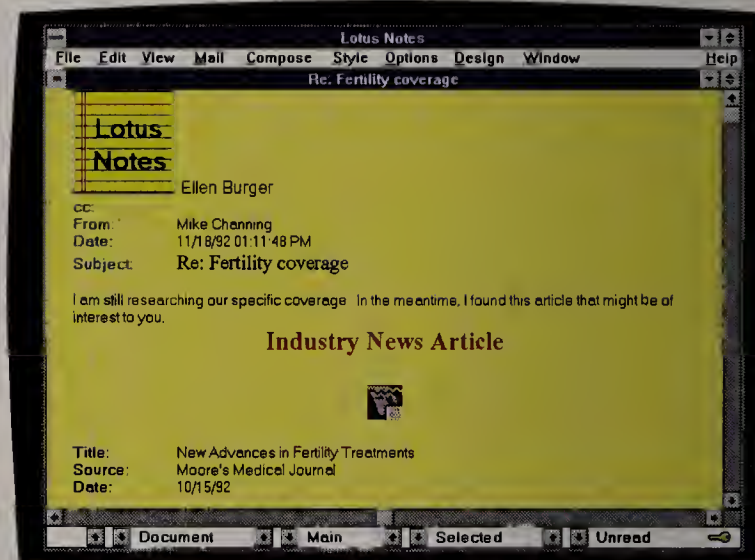
1. This is Mike's Notes desktop. Each icon represents a different database. In the course of the day, these are the ones he uses most frequently. To start the day, Mike decides to check if any new benefits questions have been forwarded his way. He double-clicks on the HR INQUIRY TRACKING icon.



2. Well, there's one that hasn't been read. Ellen Burger has a question about her coverage. Ellen called the company's BENEFITS HOTLINE. The operator entered her query into Notes and it was automatically routed to Mike. Mike double-clicks to find out what the problem is.



5. He simply double-clicks INDUSTRY NEWS, and searches two categories: In vitro fertilization and artificial insemination. First up is a recent story from Moore's Medical Journal. Since the article includes authoritative information, he decides to forward it to Ellen.



6. Mike quickly composes a note and forwards this document directly to Ellen. That done, he gets himself a cup of coffee.



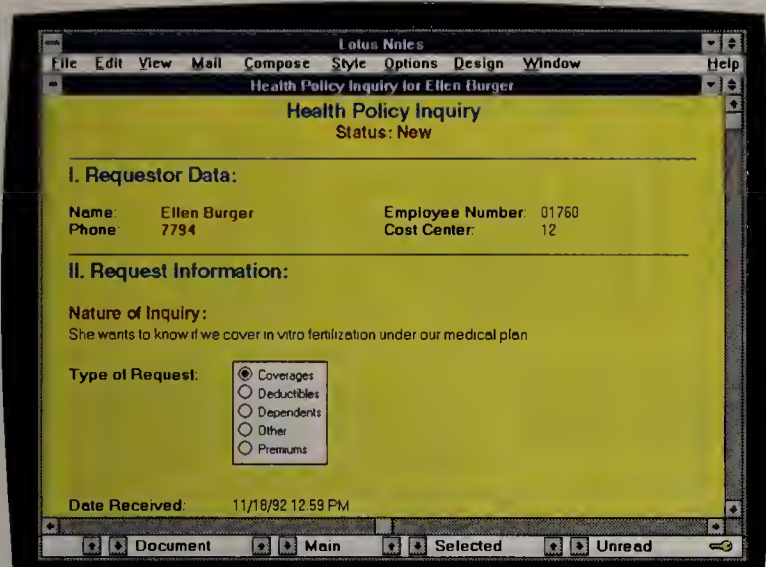
To demonstrate that had to make and

*Mike Channing
Benefits Liaison*

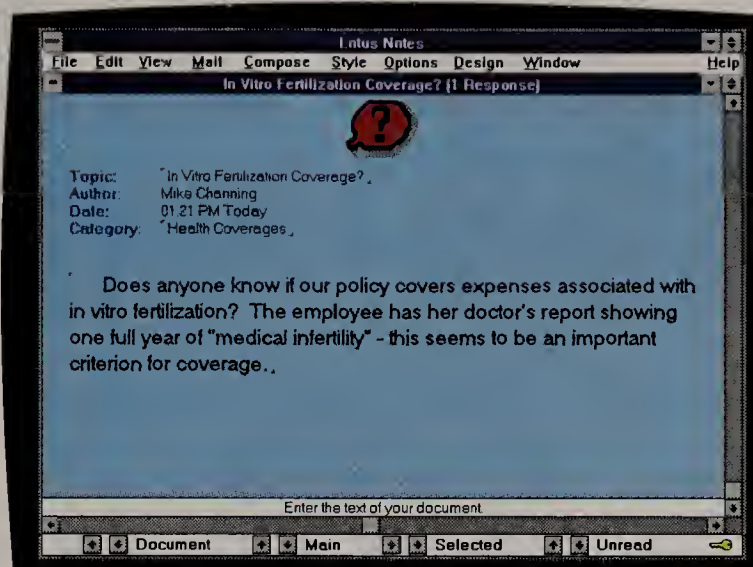
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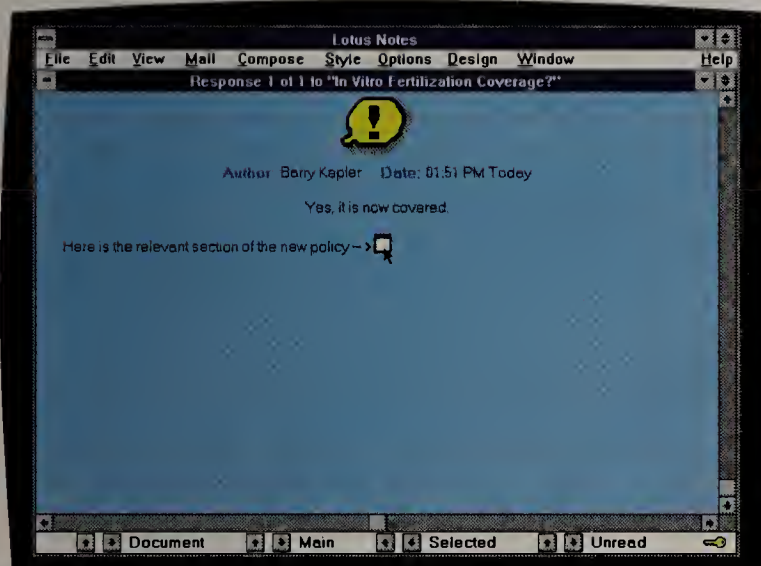
Let's watch how Mike Channing uses it: As a tracking tool for customer service. As a conferencing system for collaborative problem



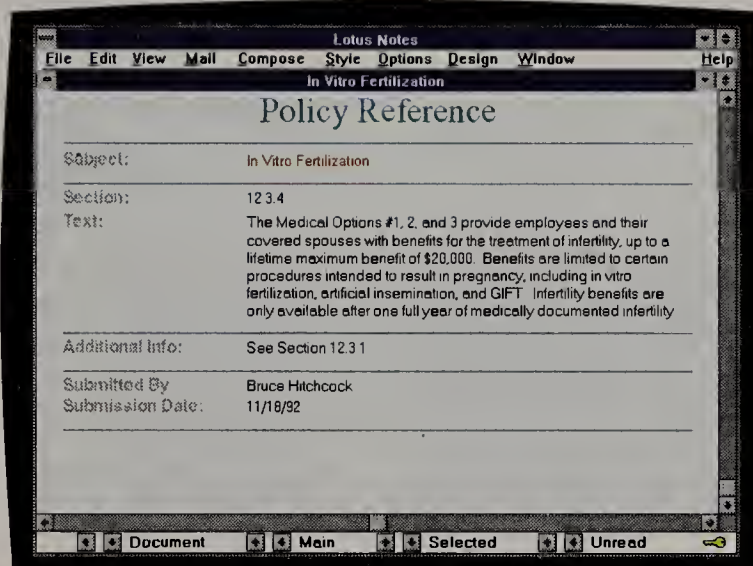
3.  Up comes the inquiry screen. Ellen wants to know if the company covers in vitro fertilization. Mike, being new, is stumped. He calls his supervisor on the phone for the answer. He's not in yet. Instead of waiting, Mike decides to post the question on the GROUP DISCUSSION database, thinking that someone else might know the answer and respond more quickly.



4.  He double-clicks the GROUP DISCUSSION icon. Once in GROUP DISCUSSION, he poses the question to his workgroup. Eager to help, Mike then decides to check out the INDUSTRY NEWS database for any background information that might be useful to Ellen.



7.  When he gets back to his desk, Mike checks back into the GROUP DISCUSSION database for responses. Not only has Barry Kepler responded with the answer, Barry actually leads Mike to the relevant section of the corporate policy manual by creating a direct link to the document.



8.  Mike clicks the DOC LINK icon. Up comes the relevant section of the policy. Mike jots a quick message and forwards both to Ellen. Job done, in less than 10 minutes, by easily tapping into expertise both inside and outside the company.

the power of Notes, we example of Mike.

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A-Teams in Residence

By making its problem-solving SWAT teams a permanent fixture, The Dime Savings Bank has improved the relationship between technical staff and users and the long-term performance of both

BY JACK WAGNER

Sometimes an organization can resemble the United Nations when the translators are on strike: a collection of skilled professionals, all working toward the same goals but unable to communicate effectively and therefore suspicious of one another's agendas. Users complain that the technical staff speaks a strange language and doesn't really understand their business; programmers retort that users can't define what they need and frequently change their minds after a program has been installed. Making matters worse, a closed-shop tradition frequently means that technical staff are physically isolated from the people they are meant to serve.

Companies will sometimes tackle rising tensions and diminished productivity with a SWAT team approach, assembling a group of experts representing all the disciplines necessary to evaluate and solve a particular problem. Such a team is focused and has the responsibility and authority necessary to complete its task.

Benefits to this approach include the development of a cooperative spirit, a sense of camaraderie and a synergy that allows the team as a whole to perform at a higher level than the sum of its participants' abilities. Unfortunately, the benefits are diffused once the project has been completed and the players return to their segregated organizational structures.

This cooperative approach can enhance the short-term performance of project teams. Making multidisciplinary teams a permanent part of the organization can improve the relationship between technical staff and users, thereby improving the long-term performance of both.

At The Dime Savings Bank in Uniondale, N.Y., multidisciplinary teams are breaking down physical and communications barriers between IS and users. The quantifiable results are impressive: We have been able to reduce overall staffing in the area of technical support by more than 32 percent. At the same time, as user requests for automation assistance continue to increase, our productivity has improved dramatically. For example, in the operational area supporting retail banking, the number of work requests completed annually has nearly doubled since we started using the team approach.

When I became CIO at The Dime, I found significant barriers separating systems planners from users. While both staffs were excellent, they had little contact with each other. As a consequence, users were developing their own makeshift solutions to problems. Sometimes this practice was harmless but time-consuming, as when users rekeyed information from mainframe-produced reports into standalone PCs. But it could also be quite damaging, as when they attempted to evaluate and im-



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plement systems such as payroll/personnel and ATM-processing on new hardware and software platforms. Such efforts threatened the development of a coordinated automation strategy for the entire bank.

During my years in management consulting, I had become familiar with the concept of customer focus teams (CFTs). Consulting organizations frequently bring together people from a variety of positions who focus their combined expertise on finding solutions to clients' business problems. Recognizing the serious implications of the situation at Dime, I announced the formation of four CFTs—mortgage banking, consumer financial services, asset recovery and corporate services (treasury, marketing and human resources)—each of which corresponded to a particular line of business or supporting organization. And each possessed the resources necessary to support its user department in the effective use of information technology.

Each team includes experts in the following areas:

Business consulting: By combining functional and technical skills, each team's business consultants act as the primary interface between users and technicians. They spend considerable time with the users in order to develop a thorough understanding of their operations and then use this knowledge to identify and recommend improvements through automation.

System development: Experienced systems analysts and programmers use their knowledge of mainframe, mini and micro applications and related technologies to develop and maintain approved applications. Because they are committed to a particular team, they feel a high degree of ownership of the work and pride in the quality of what is achieved.

Customer support: Support analysts are responsible for the testing, implementation and operational support of current and planned applications. They have a solid functional background that effectively complements the expertise of the technical staff.

In order to increase interaction be-

Work requests are now defined and understood the first time, all but eliminating reworking, extensive delays and user frustration.

tween IS and users, we relocated the four teams into the same building as the users they support. The new proximity helped generate mutual respect and a new understanding of each other's operational environment.

On a regular basis, each team leader or business consultant meets with the user staff to discuss both the status of current automation projects and potential enhancements. In many cases these discussions take place during the users' internal staff meeting, in which the business consultant has become an official participant. In addition to concerns about current automation projects, the business consultant is exposed to other issues or user problems. This interaction helps the CFT to better understand the operational goals of the entire business unit, facilitating the development of a more integrated business/automation strategic plan.

Improved knowledge of the business unit puts the CFT in a much better position to manage user priorities and work requirements. In the past, the programming manager didn't have this expertise and could not effectively adapt to rapidly changing priorities or an increased workload. Work requests are now defined and understood the first time, all but eliminating reworking, extensive delays and user frustration.

CFTs are also responsible for productivity improvements because programming, testing and quality assurance all occur within the same group and the same department. There are no test results awaiting user review or program specifications awaiting user sign-off. Simple

projects can be programmed, tested and installed in the same day by CFT members. In the past, this would have taken several days.

A prime example of the effectiveness of this team approach was our ability to successfully implement a major application software release with minimal user involvement. Project ownership was assigned to the CFT rather than the user, allowing the IS department to adhere to a very aggressive schedule. The installation went so smoothly the users never realized that the change had taken place.

CFT members quickly became convinced that the new organizational structure was a vast improvement over its predecessor, and our annual user surveys gave us high marks for customer support. But it was a case of mistaken identity that most emphatically proved the effectiveness of the project-team approach. In an effort to familiarize himself with the bank and his department as quickly as possible, the new head of the asset recovery department set up interviews with staff members identified as especially knowledgeable. He soon noticed one particular person who seemed to have all the answers, and began relying on his insights to shape plans for the unit. They had been working together for several days when the manager discovered—to his surprise and my delight—that his "expert" was not part of the asset recovery department at all but was in fact the business consultant in my unit.

The new department head freely acknowledged that he had never seen a data processing organization so tightly coupled and integrated with the business units. He became one of our strongest supporters and provided the verification I needed to validate the team concept.

The benefits to users of this approach are constantly increasing. I recommend it highly to IS departments everywhere, regardless of their industry. ☐

Jack Wagner is CIO at The Dime Savings Bank in Uniondale, N.Y.



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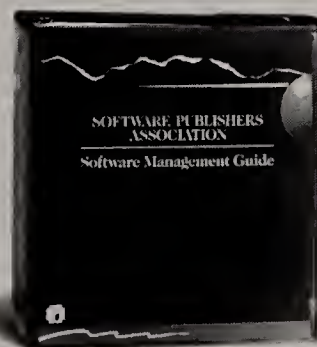


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REINVENTING THE HEAL

BY MEGHAN O'LEARY

FOR MANY ORGANIZATIONS, reengineering is the commitment to change that razes functional barriers, gives rise to a robust technical and communications infrastructure and unites the enterprise. As Lee Memorial Hospital of Fort Myers, Fla., has discovered, reengineering carries with it both the reality of upheaval and the promise of freedom from the structural inefficiencies that plague the health-care industry. It requires farsightedness on the part of management, the willingness to shoulder greater responsibility on the part of users, a major investment in technology and the ability of all players to work together across

departments and management levels in order to create business systems that work. (See related story, Page 34.)

In May 1990, Lee Memorial President Jim Nathan was approached by Andersen Consulting and Eastman Kodak, who were searching for a guinea pig for a health-care reengineering project. Andersen had been successfully reengineering manufacturing companies throughout the '80s and wanted to apply its

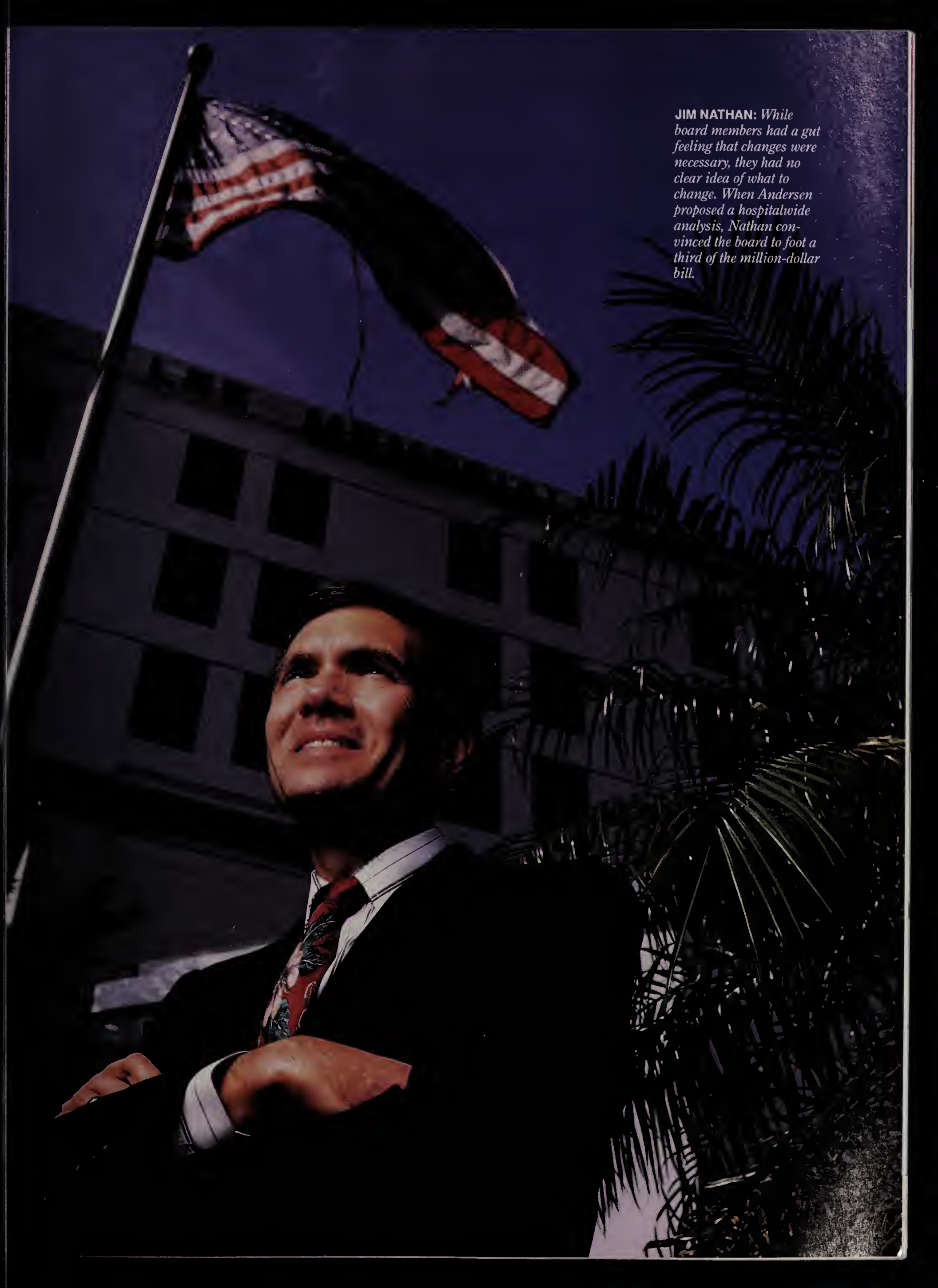
expertise to new markets in the '90s, according to Kurt Miller, an Andersen consultant with the Lee Memorial project. It chose health care because the industry's challenges resembled those faced by manufacturing in the '70s and '80s: the struggle with revenue caps, a skilled-labor shortage, greater consumer emphasis on the quality of the product, and the increasing prevalence of technology.



BECKY WATT (left), a member of the implementation team, and FRANCINE GOMBERG, who led the analysis effort, exchange ideas.

STORYLINE

Facing shrinking revenues and burgeoning labor costs made worse by a labor shortage, west Florida's Lee Memorial Hospital is reengineering the way it delivers care. No longer will costly specialists attend to routine pieces of patient treatment. Nor will communication and scheduling be poorly coordinated, or burdensome paperwork allowed to distract caregivers from providing actual patient care. When the project is completed in five years, Lee will have reinvented itself as many smaller hospitals within the larger one. Even now, after two key pilot projects, Lee's future begins to take shape: Its nursing staff credits new technologies and redesigned processes with aggregate savings of 250 hours of labor on each and every shift.



JIM NATHAN: *While board members had a gut feeling that changes were necessary, they had no clear idea of what to change. When Andersen proposed a hospitalwide analysis, Nathan convinced the board to foot a third of the million-dollar bill.*



DARRYL J. BOLLINGER estimates that in the last two years, as many as 100 staff members have participated in ad hoc committees.

Andersen's timing was good. Lee Memorial knew it had to get its costs under control, become more efficient and improve communication. The hospital had recently hired a director of operations improvement, Francine Gomberg (now vice president of cardiology), to figure out how to accomplish these goals. Still, Nathan admits, at that point the board was running more on the gut feeling that changes were necessary than on any clear understanding of what to change.

Andersen proposed a hospitalwide analysis to determine the potential benefits of reengineering patient care. Nathan convinced the hospital's executive board to contribute \$330,000 to fund one-third of the analysis, and Andersen and Kodak contributed the rest. (For its part, Kodak, which does significant business in medical imaging and had previously partnered with Andersen on internal reengineering projects, sought to play an observ-

er's role to learn how reengineering might be applied in a health-care setting.)

A team of Andersen consultants working with Gomberg spent nine months following nurses and staff around to see how much time they spent charting, passing out medication, starting IVs and waiting for test results, therapists and lab clinicians. They counted how many times patients were moved from place to place for lab tests and how many miles they traveled during a stay. They counted the number of times therapists and clinicians went to a patient's room only to discover that the patient was in some other room with another therapist or clinician.

At the end of nine months, the team concluded that poor communication and coordination resulted in overwhelming paperwork, missed tests, scheduling snafus, redundant patient procedures, mistakes in care

and a lot of wasted time and effort. In addition, much of the work being done by specialists was routine and could be performed more cheaply and efficiently by nonlicensed caregivers. And while mainframe terminals at nursing stations on each floor held patient records, they played no dynamic role in collecting patient information and facilitating care.

According to Nathan, the team saw opportunities to reduce the hospital's \$200 million operating expenses by 5 to 10 percent with the creation of patient-focused care (PFC) teams, which would be trained to handle 80 percent of all patient-care needs within their departments. The idea behind such teams is to improve coordination and quality by making the team responsible for

Everyone Makes Mistakes

.....
Behind all great successes lurk painful memories

Reengineering has only recently graduated from trendy management vogue to oft-implemented reality. With the stakes, risks and potential rewards all running high, organizations need expert help to survive the inevitable potholes in the reengineering road. Next to competent support from a vetted consultant, perhaps the best knowledge base lies in the hard-learned lessons of other, more experienced, companies—such as CIGNA Reinsurance of Philadelphia.

all aspects of patient care and bringing services to the patient's bedside or care unit whenever possible. A department might have several teams, each dedicated to seven or eight pa-

(Centralized facilities would still exist, in the event that a departmental X-ray machine failed or a test required a multimillion-dollar piece of equipment.)

The team saw opportunities to reduce the hospital's \$200 million operating expenses by 5 to 10 percent with the creation of patient-focused care teams, which would handle 80 percent of all patient-care needs within their departments while improving the coordination and quality of care.

tients. The teams would have access to decentralized ancillary-service facilities for admitting, lab tests and X-rays, so that these activities could be performed in each department.

Led by a head nurse, caregivers on each team would be cross-trained in all routine patient-care functions. The nurse would act as the point person for the attending physician.

Point-of-care (POC) terminals located just outside patient rooms and linked to departmental LANs would replace the nursing stations' terminals and allow caregivers to enter patient information, access lab results and patient accounts on the hospital's mainframe, and chart recovery. A robust hospitalwide network would support communication, scheduling, charting and each department's decentralized services.

The Andersen team laid out its plan for the hospital's board, which balked at forking over the estimated \$6 million it would take to buy POC terminals and software, lay fiber-optic cable to every floor and patient room, and build a unit designed specifically to support decentralized team care. The board was in the process of updating its strategic, long-range plan. It was also on the verge of opening a second, multimillion-dollar campus. And it had new board

"The biggest thing we learned is that you have to continually and repeatedly communicate," said Gary M. Wolters, assistant vice president of reinsurance administration. CIGNA began its adventures in reengineering in 1989, when few people even knew what reengineering was. While the insurer's successes are now widely celebrated, less well-known are the mistakes and near stopping points CIGNA encountered along the way.

Take, for starters, the company's inauspicious choice of a consulting partner with too little depth of experience in reengineering. "We had the top level of our consulting firm talking about it, but the people below were implementing things the way they always had," said CIGNA Vice President of Systems Ian W. Drewette. While the CIGNA people wanted to understand how reengineering would apply to their business, the consultants went wild documenting workflows. By the time CIGNA realized the consultants' lim-

itations, four months had already been spent on extensive workflow analysis. "We had tons of documentation that we literally threw out [when we hired] the second consultant," said Drewette.

As CIGNA progressed to launching its redesigned system, the company fell prey to a tyrannous timetable and implemented the organizational changes before the enabling technology was ready for users. Work teams responsible for every aspect of each customer's account were put in place before they had electronic access to all the relevant information. Positions eliminated from the old work process were phased out before the efficiency benefits of new IT systems were available. A frustrated workforce had to be trained again after the technology was installed. Looking back, Wolters and Drewette believe they had no choice but to set the troublesome timetables; if they were to do it again, however, they would redesign training and let peo-

ple know ahead of time that the learning process would be difficult.

Another hot spot was the sensitive issue of job loss resulting from reengineering. At the time CIGNA leapt into reengineering, Wolters and Drewette looked at their historical attrition rates and calculated that during the two years of implementing changes, they would be able to keep the jobs of everyone in the unit. In their regular meetings with employees, they painted this optimistic scenario. But when the economy went south, the attrition rate plunged: People clung to the security of steady jobs. Some were let go after being told they wouldn't be, and trust in management plummeted. Drewette and Wolters now say their meetings with employees would have benefited from a dose of openness about how they arrived at their conclusions about job loss and about the effects of the economy on the business.

—M. O'Leary

members who didn't yet have a grasp of the project.

In addition, although Andersen and Kodak were allowed to participate in the needs analysis, the board was reluctant to let outsiders implement such changes and questioned whether it wouldn't be cheaper for the



REPRESENTATIVES from every department, including pharmacy (left) and physical therapy (right), provide critical input.

hospital to do the project on its own.

"They needed some 'mind-set facilitation time,'" Nathan said. "We spent about four months working with the board, trying to make them see the need for outside objectivity, especially with the amount of change we had going on." The analysis team finally convinced the board that they needed to do the project with an experienced partner. In addition, Nathan said, as an alpha site, Lee Memorial could learn from the experiences of Andersen's other reengineering clients.

During those four months, hospital users prepared their own presentations for the board, which wanted to see support for the redesign from the people who would be most affected by it. It took one session—during which nurses, physicians and other staff described how reengineered patient care would allow them to do their jobs better—to convince the board.

tatives from Andersen and Kodak; the nursing project coordinator, Becky Watt; and nurses and managers from key hospital departments. Under Nathan's direction, the committee actively recruited department directors and senior staff members. "Some organizations find only the most change-oriented people, and I'm not sure that helps you change," Nathan said. "We went to the director of respiratory, the director of orthopedics and the head nurse and said you need to be on this team" in order to survive.

IT WAS CRITICAL that the team include representatives of every department, from radiology to legal services, so that the impact of the changes could be assessed from a hospitalwide viewpoint. "We needed to know the implications of having drugs out on the floor from a pharmacy standpoint," Bollinger said. "And we needed to make sure we didn't

run afoul of any narcotics regulations or regulatory requirements." In the last two years, the core team of nine has made extensive use of ad hoc committees to deal with such questions, and Bollinger estimates that as many as 100 different staff members have participated on those committees.

The head of orthopedics was particularly important, not only because he was one of the few physicians who found the time to participate in the project design, but because the orthopedics staff was especially eager for patient-care change.

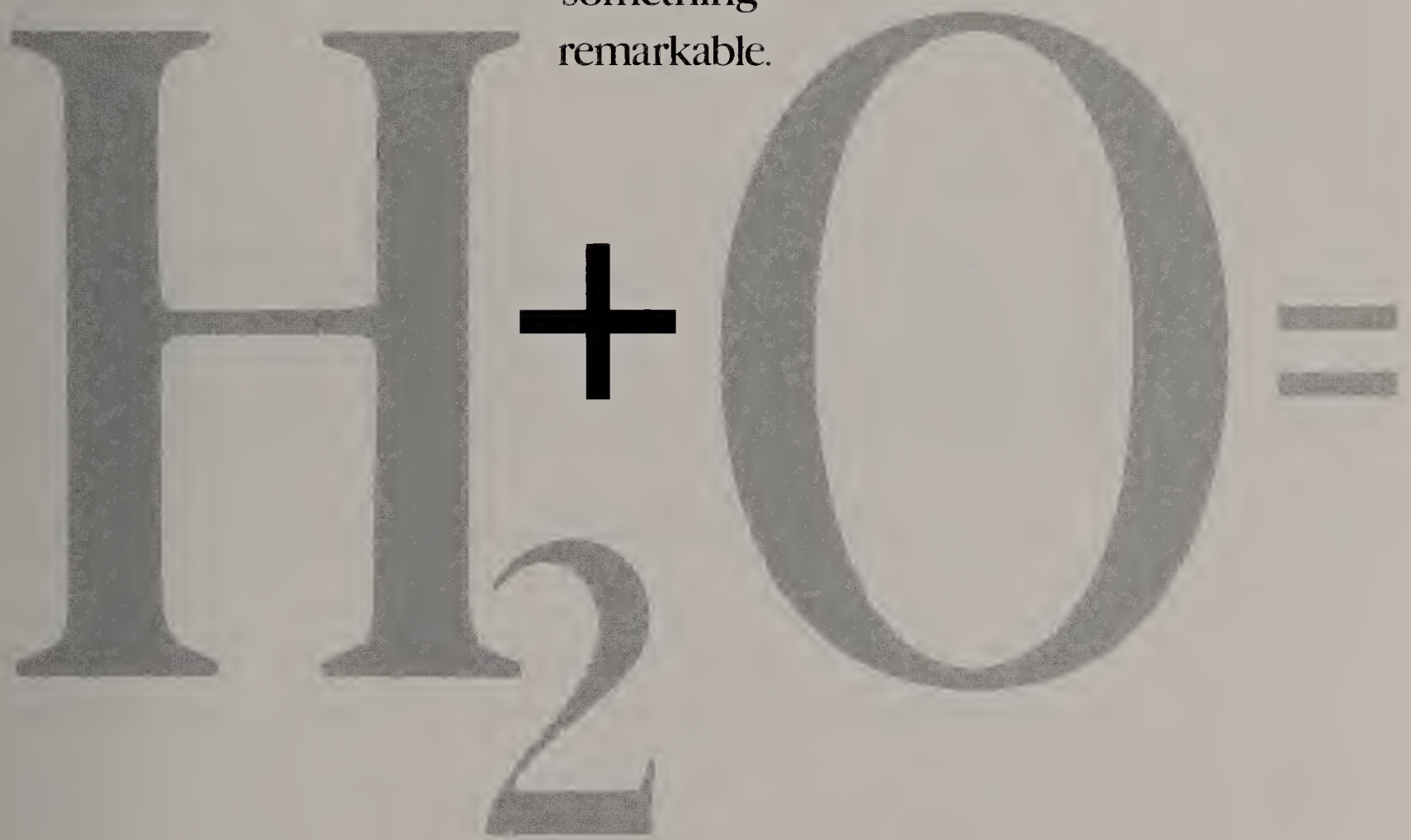
For those reasons, the steering committee targeted it as the pilot site for the PFC teams. In addition, orthopedics was an ideal test site for the process redesign because the course of recovery is very predictable and the length of stay is long enough (four to seven days) to be affected by better coordination of care.

The implementation team had to make users understand that responsibility for the changes was in their hands—in effect, to get them to own the project. "You can't just go in and turn the orthopedics floor upside down without involving them," Bollinger said.

"One of the things we had to convince the orthopedics staff of was that while we had done an analytical process, we didn't know how to [implement] it, and they were going to be the ones to design the system," Nathan added. The implementation team worked with a pilot PFC team within orthopedics to hash out the day-to-day specifics of working as a team and providing a broader range of patient care with a smaller number of people.

The implementation team trained the PFC team's head nurse to oversee the group, delegate responsibilities and manage the caregivers' relationships with physicians. Non-managing nurses learned to delegate routine tasks to nonlicensed caregivers, who also were trained to expand their skills and range of duties. During the first six weeks of

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you can
come up
with
something
remarkable.





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the reengineering effort, turnover among nonlicensed technicians was high. Since March, however, when the redesign went online, orthopedics has had no turnover, and nursing heads report that staff are happier in their expanded jobs.

During this time, the implemen-

with information specific to each patient (such as age, special medications and allergies), thus reducing the possibility of error.

Pharmaceutical ATMs (by Pyxiss) would decentralize drug distribution. By simply entering an ID number, authorized caregivers would be able

there. (The hospital was also constructing a PFC unit designed specifically to support decentralized team care and didn't want to waste money retrofitting cable to the existing orthopedics unit only to move the department to the new unit in January.) The charting system logs information from ICU monitors automatically and allows caregivers to use function keys to record patient-care activities. It then posts the information to centralized patient records.

While Lee Memorial has yet to compile hard numbers by which to judge its early success, informal surveys of nursing staff indicate that the new technology alone saves an hour per shift for each of 250 nurses. In addition, patients treated by care teams have experienced fewer postsurgery setbacks, such as dislocated hips (a common result of patients being moved improperly), falls and medication errors. Caregivers have reported a decrease in the length of patient stays of about half a day for joint replacements and two days for fractures.

Nathan and Bollinger estimate that the plan to create patient-care teams hospitalwide and to fully install technology to support decentralized patient care will take another five years. In order to realize the hospital's goals, the project team will have to determine how the lessons they have learned in orthopedics can be applied throughout the hospital. Although the principles of team care are reliably transferable, patient requirements and the specifics of care vary so drastically from orthopedics to, say, obstetrics, that every redesign project will start from ground zero in terms of application. For now, orthopedics and the ICU operate like mini hospitals within a hospital.

Nathan is cautious about seeing the team concept as the cure-all for the hospital's ills. For now, he is more interested in applying certain administrative successes—such as charting by exception and Pyxiss—hospitalwide to create a strong financial base for better patient care. ☐

Because the orthopedics staff was especially eager for patient-care change, it was targeted as a pilot site for the new team approach to delivering care. In addition, orthopedics was ideal for process redesign because the course of recovery is very predictable and the length of stay is long enough to be affected by better coordination of care.

tation team also worked with Bollinger and two registered-nurse members of his staff to pilot the POC terminal system in orthopedics. They determined first that the terminals could replace the mainframe terminals in the nurses' stations on each floor, and eventually that the nurses' stations were unnecessary. (The hospital is considering equipping team coordinators with mobile personal phones, now that there will be no central phone station.)

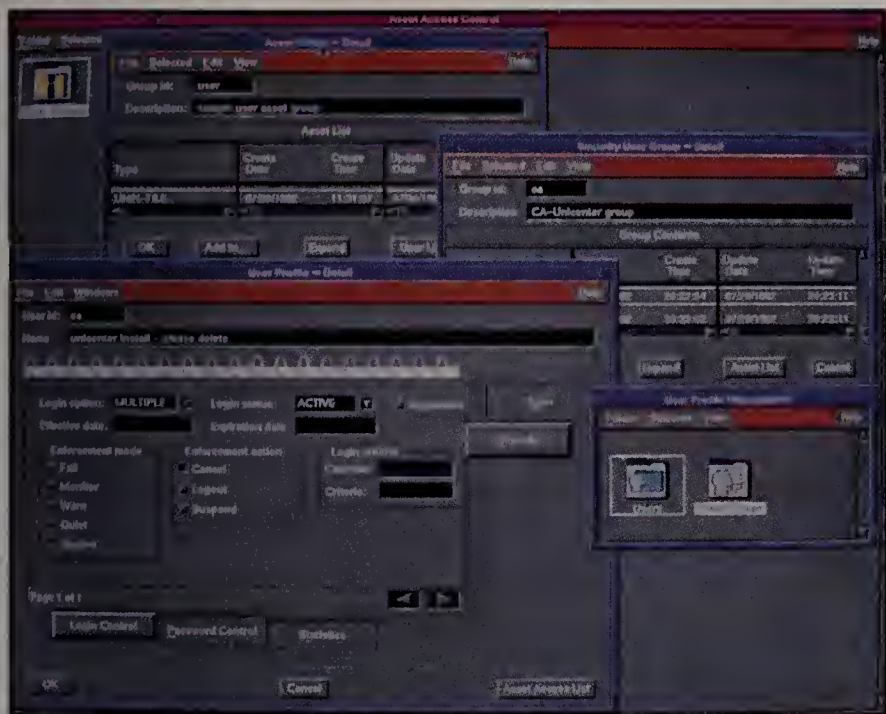
Interviews revealed that caregivers spent 18 percent of their time charting patient care and progress. The team determined that the POC terminals, connected to a Novell network running SQL Server, could cut that time in half by supporting electronic charting, based on a predefined range of normal patient-recovery behaviors and procedures. The POC system would give caregivers and physicians access to lab results and other pertinent patient records on the hospital's mainframe-based central information system via a fiber-optic network. When finished, the system will also automatically coordinate standard patient-care procedures—known as critical-care paths—

to dispense medications and record the transaction for the patient's medical and billing records, as well as for hospital inventory. Pyxiss is also stocked with "first dose" medications that a nurse can give to a newly admitted patient when the hospital pharmacy is closed.

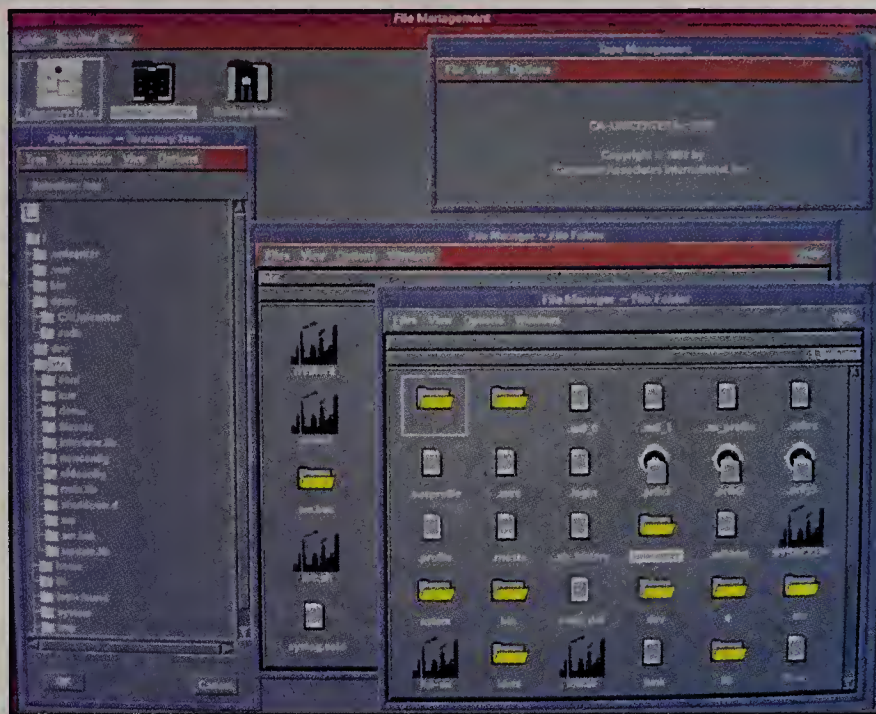
To date, POC terminals that allow caregivers to enter data and retrieve lab results have been installed at the entrances to patient rooms throughout both of Lee Memorial's care facilities. (After testing bedside terminals in noncritical-care units, hospital nurses complained that patients distracted them with questions, so the terminals were moved outside of the rooms.)

THE HOSPITAL ALSO has plans to implement an electronic-charting system throughout the institution. For the last 18 months, it has run an electronic-charting pilot using terminals next to its 100 intensive-care beds. The implementation team chose the intensive-care unit (ICU) as the test site for electronic charting because ICU patients tend to be connected to a lot of medical monitors, and thus the wiring infrastructure was already in place

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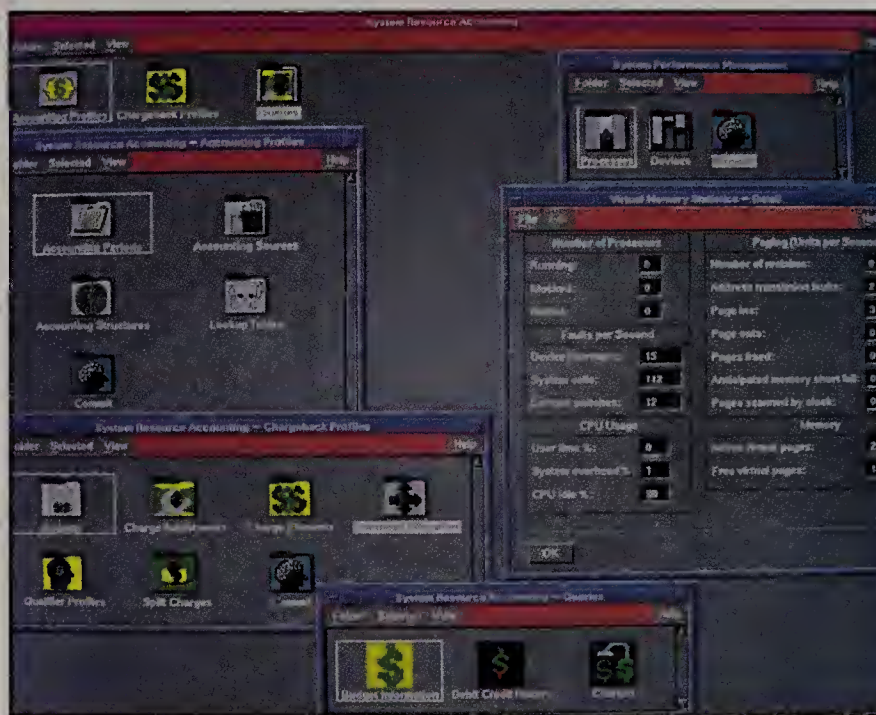
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POP GOES THE NETWORK

At MTV parent
Viacom
International,
the new anthem
these days could
be, "I want my
L-A-N!"

BY THOMAS KIELY



Personal computers and local area networks aren't exotic new technologies. They have history. Yet as corporate systems, LANs are as fresh and raw as the latest hip-hop group with attitude. Many of the tools commonplace in a mainframe environment don't exist for LANs. Networked PCs can be fragile beasts, vulnerable to mysterious ills; sick LANs are often more resistant to diagnosis and cure than their glass-house cousins. But this isn't news. Companies adopting LANs as their production platform of choice are well aware of the difficulties they face, aren't they?

Well, anticipating problems is one thing, experiencing them quite another.

Just over two years ago, Viacom International embarked upon a \$40 million overhaul of its information systems. (Viacom is the New York-based parent of MTV [Music Television] Networks, the Showtime pay-cable network and other television-entertainment interests.) The plan mapped out by Viacom's top managers and several IT consultants called for AS/400s in the data center and PCs as the computing point of entry. But throughout the implementation, Viacom's IS staff found themselves eyeball-to-eyeball with the unanticipated.

Vice President and CIO Henry Leingang and other company IS executives candidly acknowledge that implementing the corporate network often meant dancing in the dark. Obtaining good information about the technology they were grappling with wasn't easy, and while IS staff expected many of the network-management problems they encountered, there were surprises. Technical support, end-user training, E-mail traffic, Lotus Notes, multimedia, electronic data interchange: These are challenges Viacom's IS staff faced or will soon be facing.

Still, now that the implementation is nearly complete, both IS staff and end users are enthusiastic about the new technology—at least at MTV, where the average employee age is in the upper 20s. (Other Viacom di-

**Implementing
the corporate
network
often meant
dancing
in the dark.**

visions have been slower to warm up to the LAN.) "There is a lot of experimentation going on here," said Edward Cannon, vice president of information systems at MTV Networks. There sure is. Headquartered in the Viacom building on the fringes of Manhattan's Times Square, MTV Networks is growing fast and continually searching for new ways to expand its pop-culture reach. Viacom IS executives believe that the flexible, personal, distributed computing delivered by a LAN will revolutionize business information at MTV and other Viacom divisions, and eventually enable new business opportunities.

The decision to revamp Viacom's sys-

tems was made following a takeover of the company in 1987 by Boston billionaire Sumner Redstone. New managers hired to run the company's highly decentralized divisions quickly discovered that Viacom's outdated technology could not deliver adequate business information.

"The previous management of Viacom considered IS unnecessary," Leingang said. "To be considered a necessary evil would have been a dramatic step up." Underfunding IS left the company saddled with an ancient mainframe running poorly maintained, badly patched and undocumented applications, and a wizened Wang office-automation system. It was worse than being saddled with a grossload of Lawrence Welk mu-

As CIO, HENRY LEINGANG maintains a big-picture perspective.



sic videos. "The technology was broken," said Leingang. "It had to be fixed."

Viacom's new managers decided it was time to get modern. They committed big bucks to a thorough IS overhaul, even as they slashed other corporate costs in order to whittle down the massive debt incurred in the takeover. The plans for the project, drawn up by Price Waterhouse and other IS consultants working with Viacom's top managers, called for scrapping the mainframe in favor of the IBM AS/400 way of computing. The Wang equipment would also go, and the divisions would be populated with personal computers. But the plans began to change almost as soon as the implementation was launched.

For instance, it soon became apparent that the company needed a CIO, according

Viacom's new managers committed big bucks to a thorough IS overhaul, even as they slashed other corporate costs in order to whittle down the massive debt incurred in the takeover.

maintain the AS/400s and all corporate applications. "We quickly discovered that we needed someone who saw the bigger picture, saw it as a whole, rather than just the parts," recalled Nowicki. Leingang was hired in September 1990, a month after the implementation began.

There were unanticipated problems. According to Viacom IS executives, the planning process was hampered by the scarcity of uncolored information about products, and the effect of skewed press reports on the expectations of senior executives frustrated their work. "We believed too much of the hype about the technology," Leingang said. In hindsight, Leingang chastises vendors and the computer trade press alike for playing up the advantages of products and glossing over the complexities. Marketing motivations aside, putting the spin on information, including technical specifications, impedes the job of evaluating and implementing technology. Viacom now installs and tests large technology components on a trial basis before committing to them.

Meanwhile, demand for PCs quickly mushroomed, far outpacing managers' expectations. Given a taste of direct access to information through terminals—a different world from mainframe-processed batch reports—users at MTV, and to a lesser extent in other divisions, went gaga. "We began with a plan to add about 600 PCs to the 400 we already had in the company," said Leingang. "We are actually adding about 1,600."

Total IS employment at Viacom rose from 60 to 110 in 18 months.

The rapidly expanding LAN complicated the efforts of the beefed-up IS staff to quickly redevelop all the corporation's mainframe applications to run on the AS/400s and establish a corporate communication link to sales offices across the nation. While much

DOUG SPITZ, ANDY ZIMMERMANN, and RICHARD ROTHSTEIN
(left to right): excited about the future



to Norbert J. Nowicki, director of human resources development at Viacom. It was assumed that the divisional IS departments would write their own applications and maintain their own segments of the LAN, and that a centralized corporate group would

of the burden for PC installation fell to divisional IS employees, data center staff had to grapple with the networking repercussions. It hasn't stopped yet: The mainframe and the Wang system will go out the door next month, but the PCs keep rolling in.

The clamor for PCs has created other conflicts. At Viacom, divisional IS heads report to senior managers in their divisions and control their own budgets; they report to Leingang on a dotted line. In keeping with the corporation's radically decentralized structure, Leingang and his corporate IS staff had eschewed standards. Yet some standardization was necessary, if only to trade E-mail. It portended culture clash, pitting maverick end users against the suits in the corporate suite.

Eventually Viacom settled on a compromise. Divisional IS chiefs, along with Leingang and other corporate IS managers, chose a standard platform: IBM 386 machines running Windows. (The Apple Macintosh is a popular box at Viacom but was deemed too expensive for widespread use.) The Windows suite of applications seemed to be the richest toolset for employees for the cost. While this has become the majority platform, the Viacom network accommodates diversity: Macs, OS/2 and Unix all have a place on the line, along with more than 50 servers.

There were other surprises. The original implementation plan had envisioned a stable environment for the first three years, says Leingang, who now shakes his head at such naive presumptions. "The thing that everybody forgets is that every component of that network changes at least once a year. The network operating system. The workstation operating system. Application-software updates, router software, bridge software. There's no such thing as stability."

What's more, in the world of LANs, new hardware or software products (or updates) may have their own peculiar bugs, or they may breed bugs when used in conjunction

with other technologies. The AS/400s aren't as trusty as mainframes, either. Viacom IS executives say they are frustrated by the lack of management tools for this platform: everything from statistical-reporting tools to tape-library management systems and report utilities. "Every new product solves a problem—and creates a host of new problems," Leingang said. "I'm continually surprised by the complexity of the system."

While LANs aren't the very leading edge of technology, they are still raw enough to drive IS to distraction. Tools for identifying and analyzing outages and other problems are commonplace on the mainframe; comparable toolsets for LANs are fragmentary and inadequate. At Viacom, whenever there is an outage, all available IS hands must assemble on deck to look for the problem. Next year, Viacom will begin to add smart hubs to the network, which should soothe some LAN management headaches, "and no doubt create new ones," Leingang said.

Keep in mind, the entire implementation took place in 30 months: just slightly longer than it takes Madonna to launch her next pop project. In 10 quarters, Viacom swapped



JUDY McBRIDE, THOMAS MELLINA, NORBERT NOWICKI and EDWARD CANNON: *The spirit of cooperation is alive and well among Viacom's divisions.*

Cannon believes the real fun lies ahead, as Viacom searches for new ways to use the technology to improve the business. "We're inventing our future as we go."

data center environments and built a LAN as big as a rock star's ego—all the while playing tag with the unforeseen. Some IS employees left, burned out by the demands.

For those who remained, the implementation has been pure adrenalin. "It's an exciting environment for IS," said Thomas A.

Viacom IS executives believe that the flexible, personal, distributed computing delivered by a LAN will revolutionize business information at MTV and other Viacom divisions, and eventually enable new business opportunities.

Mellina, vice president of Viacom's information technology group. "If you're 25 years old [in this field], this is the place to be."

Among end users, though, the zeal for technology isn't consistent across Viacom's divisions. MTV Networks now has a PC on every employee's desk. It has implemented 15 LAN applications in the last 12 months and is hot to experiment with new media, which may lead directly to new products. Showtime launched the corporation's

first mission-critical client/server system, a scheduling/logging application. But the Entertainment division has been undergoing a major restructuring, and technology is a lower priority; fiber optics is the research preoccupation of the Cable division. E-mail usage is spotty across the divisions and seems to depend upon individual preference and senior-management acceptance of technology, which is vigorous at MTV but not at other divisions, where senior officers are skeptical of the business case for IT's vision.

Still, IS managers are jubilant about the implementation. They now see it as more than a project to fix broken technology; they see it as a competitive platform for the future. "This whole effort is raising the technological sophistication of the company," said Leingang. "It's a different world than it was two years ago."

It is a world that continues to evolve. Showtime is reengineering some of its financial processes, an opportunity created by the advent of the LAN. MTV is experimenting with Lotus Notes, as are Viacom's senior corporate managers. MTV's Cannon, who while at Paramount Pictures helped to spearhead an EDI standard for the movie industry, is investigating the possibility of linking MTV Networks directly to media customers through an EDI system. As he envisions it, the EDI link would make it easier for customers to buy and manage advertising time on MTV's stations. His colleague Richard Rothstein, director of information services for Viacom, is pushing multimedia projects to sensitize employees to the changes underway in their industry as the lines between computers, televisions and consumer electronics begin to blur.

Meanwhile, as the implementation project nears completion, Leingang looks forward to a new role for IS—and for the office of the CIO—within Viacom's decentralized culture. He would like IS to become more than a reactive support unit, to become more integrated with the business of the divisions. The CIO would help to promote this role and add technical direction and a corporatewide perspective.

Riding the LAN implementation has been a kick, say Viacom IS managers. But Cannon believes the real fun (and more problems) lies ahead, as Viacom searches for new ways to use the technology to improve the business. "We're inventing our future as we go." ☐

TECHNICAL PROFILE

Viacom International Inc. is a New York-based television entertainment company. Its primary businesses are MTV Networks (including the MTV, VH-1 and Nickelodeon channels); the Showtime pay-cable network (Showtime and the Movie Channel); a television production and syndication business; cable systems in California and Nashville; and a number of broadcast-television and radio stations. In 1991, the company earned \$508 million on revenues of \$1.7 billion.

Viacom's data center contains eight IBM AS/400 minicomputers, with 166 gigabytes of storage. All the corporation's core business applications, including general ledger and payroll, run on the AS/400s. In addition, the data center is the hub for the corporate local area network and a wide area network connecting 17 U.S. business units.

A corporate network supports the bulk of decentralized computing at Viacom. Of the 1,900 personal computers hooked into the LAN, the majority are IBM 386-based machines running Microsoft Windows and a variety of Windows-based Microsoft office applications, including Excel and Word. There are also a number of Apple Macintoshes and OS/2 and Unix-based machines on the network. Over 50 servers support the LAN, for which Viacom's decentralized units have written their own business applications. Viacom has also installed a nationwide E-mail system.

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THE BEST *Of* BOTH WORLDS

BY THOMAS KIELY

Centralized and decentralized organizations offer strikingly different benefits, and combination companies hope to reap them all. A strong and supple IS organization is critical to holding all that diversity together.

ORGANIZATIONS ARE NEVER STATIC, BUT in the era of restructuring, reengineering and rightsizing, companies are metamorphosing more rapidly than a city block undergoing gentrification. Some functional companies are decentralizing their business units; some decentralized companies are consolidating pieces of their frames; in the interim, a variety of hybrids bloom in the industrial landscape. IS often plays a critical role in maintaining the balance between chaos and control.

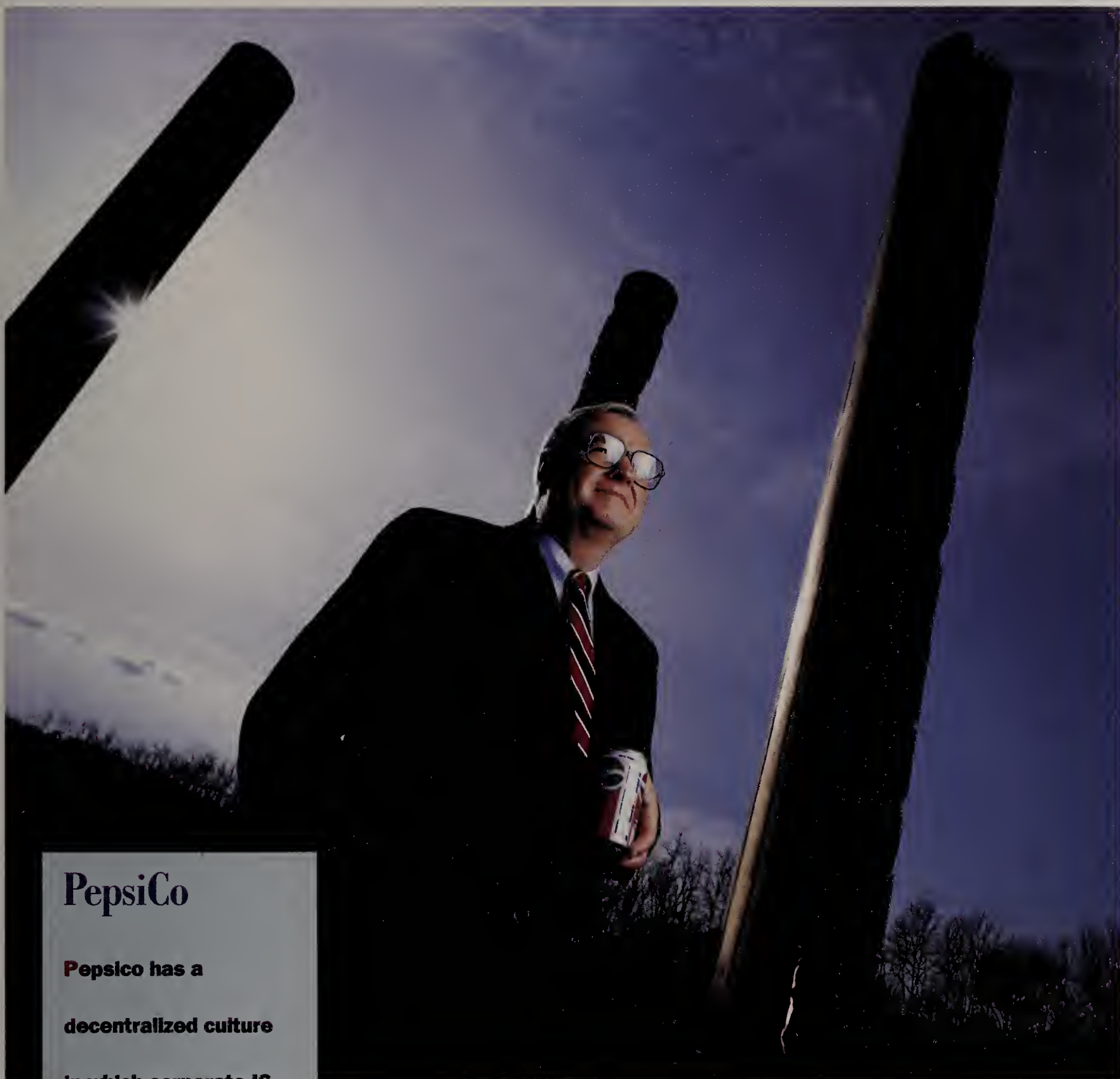
It may be a role that an increasing number of companies will require their IS organizations to adopt. A number of consultants and academics believe some companies can improve their performance by seeking a common ground between centralization and decentralization. In their view, the oxymoronic blend under one corporate roof of autonomy and control, independence and group-think, entrepreneurial moxie and organizational providence can foster hot corporate performance. (See "Winning Combinations," *CIO*, August 1992.)

For IS executives, this mongrel corporate structure brings with it a host of new management conundrums. To get an idea of how IS fares within a combination company, *CIO* took a good close look at three examples: PepsiCo, Marion Merrell Dow and Rockwell International.

In theory, business units that chart their own destinies will react more quickly to changing market forces than business units fettered by a centralized decision-making hierarchy. Freedom translates into competitiveness and profits.

Decentralization also translates into higher corporate costs. In a thoroughly decentralized company, each business unit will operate its own administrative systems, such as human resources, logistics and payroll. Duplicated unit by unit across the enterprise, these nonstrategic overhead costs can far exceed comparable outlays in lean and mean centralized companies. Ergo, this theory concludes, if corporations can strike the right balance between decentralized profit-driven functions and centralized nonstrategic costs, they gain the best of both organizational worlds.

In practice, strategies for achieving this balance vary widely. Industry and business pressures, organizational politics and the cost of change are a few of the factors that can influence the complexion.



PepsiCo

Pepsico has a

decentralized culture

in which corporate IS

plays a facilitative role.

The CIO's success

depends on strong

relationships based

upon lots of open,

candid communication.

PEPSICO INC., headquartered in Purchase, N.Y., tips the balance toward decentralization. The \$19.6 billion corporation competes in three diverse business sectors (soft drinks, restaurants and snack foods). PepsiCo business units enjoy considerable autonomy: They set prices, develop new products and handle operations without interference from corporate overseers. However, corporate headquarters sets strong performance measures for business units and maintains an influential centralized strategic-planning staff.

IS is also highly decentralized at PepsiCo. Allan Deering, PepsiCo's vice president of MIS, sees himself as a peer of the IS directors in the business units, not as the corporate technology czar. His immediate responsibility is to manage IS for corporate headquarters. In that capacity Deering oversees a staff of 120, runs the data center for the corporation (and for the soft-drink division, in a chargeback arrangement) and develops corporate appli-

ALLAN DEERING
says that corporate IS has to show where it can add value to divisional operations.

PHOTO BY KENT HANSON

cations. "Corporate is just another division," Deering said.

He does not set enterprisewide standards for the company, and although he coordinates many cross-divisional technology purchases to get volume discounts, business-unit IS directors aren't obliged to participate in group purchase plans. IS executives in the business units don't

in a fiercely competitive business. (When Pizza Hut added chicken to its menu, it came as a big surprise to Kentucky Fried Chicken franchises.) Each chain is seeking new markets, broader product mixes and lower costs—hence the appeal of consolidating redundant operations, such as data centers.

There is a precedent for central-

movement [of staff] within the company, and many linkages are formed over time. This creates a lot of trust [within the IS ranks] that tends to transcend organizational boundaries."

Relationships are also crucial to Deering. His effectiveness as an IS facilitator with an enterprisewide perspective depends on his ability to link people together and to spark discussions. (Cramm gives him high marks.) For instance, Deering can't force divisional managers to pool their purchases of hardware and software to gain volume discounts, but he labors mightily to persuade them of the benefits—which last year amounted to nearly \$12 million in savings. He also believes that eventually the company may merge some nonstrategic, cross-divisional applications, such as payroll.

To further management-by-relationship, PepsiCo's top IS managers gather together at least once a year, and all the IS organizations meet every two years. Additionally, Deering or another top manager hosts a number of IS specialty group meetings, such as technical conventions for the staff of PepsiCo's five data centers. Deering also heads a corporate group that keeps IS organizations throughout PepsiCo apprised of technical advances both within and without the company, and links together disparate groups working on similar problems.

Where the dotted lines connect to peers instead of subordinates, managing through influence rather than

PepsiCo's vice president of MIS sees himself as a peer of the IS directors in the business units, not as the corporate technology czar.

even report to him; they report to their respective divisional CFOs. (Deering does too.) The overall budget for IS at PepsiCo is about \$200 million annually; Deering's slice of that amounts to about \$20 million.

"Allan is a coordinating force within the company," said Susan Cramm, vice president of MIS at Taco Bell, one of PepsiCo's restaurant chains. "He's the functional head of IS for the holding company, and he keeps the rest of us together as a team." But she is quick to qualify the image. Don't think of Deering as a team leader, she says; think of him more as a facilitator, an integrator. (She characterizes her own organizational relationship to Deering as a "weak dotted-line" connection; Deering insists that no line exists at all.) Corporate IS doesn't rule the roost, formally or informally.

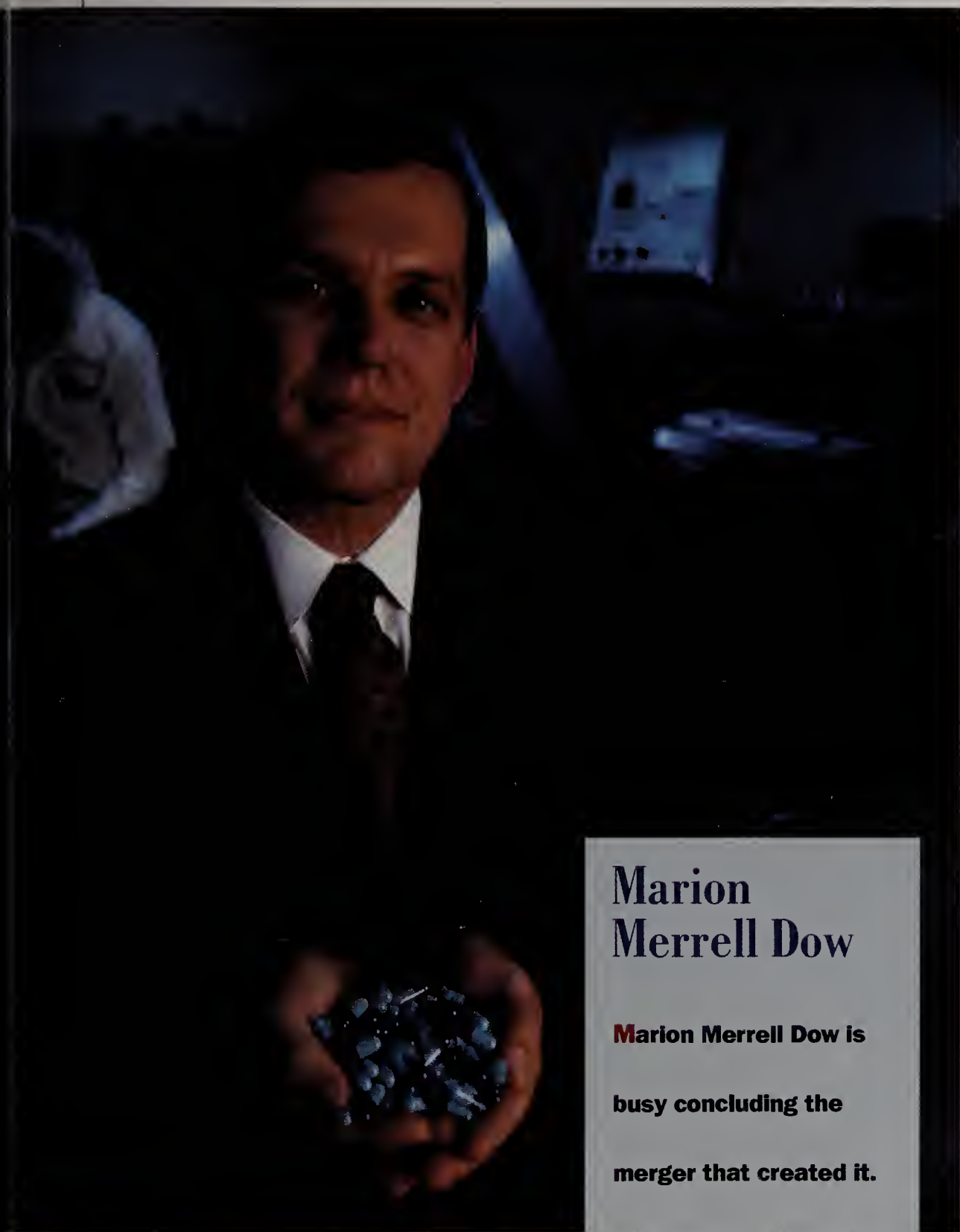
For instance, Deering is involved in discussions to consolidate data centers within the corporation's restaurant division, but ultimately divisional managers—not corporate IS—will decide on any mergers.

Because of the company's culture of decentralization, that won't be an easy decision to make. (Some PepsiCo observers have criticized the company's decentralized culture, citing redundancy, poor communication and organizational tangles.) The division's three primary restaurant chains—Taco Bell (headquartered in Irvine, Calif.), Kentucky Fried Chicken Corp. (Louisville, Ky.) and Pizza Hut Inc. (Wichita, Kan.)—are rivals

in a fiercely competitive business. (When Pizza Hut added chicken to its menu, it came as a big surprise to Kentucky Fried Chicken franchises.) Each chain is seeking new markets, broader product mixes and lower costs—hence the appeal of consolidating redundant operations, such as data centers.

But distribution isn't strategic to the business, and technology is. "We may or may not consolidate the data centers," Cramm said. "There's a lot of resistance to the idea." Consolidation swims against the corporate culture and may appear risky to senior managers who feel they need to control the resources that support their businesses. But with the advent of downsizing, the data center isn't as critical a business resource as it once was. With consolidation, Cramm and her peers—working with budgets of about \$20 million each—could shift the savings of about 15 percent to other, more critical technologies. More importantly, consolidation abets a shift from older to new business technologies, such as client/server architectures.

Cramm admitted that the IS leaders from the three chains are also considering "synergies for other technologies within the restaurants," but she declined to elaborate. Anyway, competition among subdivisional units can get muddled, she noted. The three restaurant CIOs "spend a ton of time with each other," Cramm said. "This is a very relationship-based organization. There is a lot of



LES CLARK believes that "discussions about standards have no value." Value lies in how the applications benefit the company.

control requires tact, great people skills and the patience to spend much of one's time communicating, lobbying, persuading. In a sense, Deering is a salesman, peddling headquarters to PepsiCo's IS executives. "We have to show that corporate can add value to [divisional IS], that we can provide support," Deering said.

Marion Merrell Dow

Marion Merrell Dow is busy concluding the merger that created it.

With the pressing need to link marketing, sales and R&D centers that span the globe, IS is playing a forceful role to quickly implement the required infrastructure.

BY CONTRAST, N. Les Clark, vice president of IS at Marion Merrell Dow Inc., manages by clout. He has to. The business demands it; the organization demands it. The \$2.8 billion pharmaceutical company, headquartered in Kansas City, Mo., is the fruit of a 1989 merger between Marion Laboratories and Merrell Dow Pharmaceuticals. The company is currently focused on completing the merger, cutting costs and dramatically ramping up its research and development—all the while keeping up with business at hand. Persuasion takes too long; what is needed is results.

"We're keeping a tight rein during the merger," Clark said. "We're rationalizing functions as quickly as possible. We had two MRP systems, two accounting systems, two purchasing systems and so on. We merged them in 18 months in the U.S. We're still fighting to consolidate [systems] outside the U.S." (Clark left IS to become vice president of global business planning shortly after this story was reported.)

Marion Merrell Dow is a global organization, with decentralized sales and marketing units in countries throughout the world. From nation to nation, governmental regulation of drugs differs, as do markets. The company has loosened the decision-making reins to the sales and marketing operations to allow them to get close to their customers, to be flexible and responsive to change. On the other hand, the company must pump up its research and development efforts in order to remain competitive. New product development is extremely costly in the pharmaceutical industry (on average, it costs about \$100 million to develop a new drug), so it behooves Marion Merrell to rationalize—consolidate—those costs wherever possible.

Still, manufacturing and research and development operations are global at Marion Merrell. "The reality of R&D today is that you need to be near the universities where important research is done," Clark ex-

plained. The company is shaping its R&D centers in Italy, Canada and the United States into centers of expertise. For instance, the Italian center has become the company's focus of all anti-infection research. But Marion Merrell needs to tie these centers together with a telecommunications infrastructure and core applications—this is Clark's main priority right now. To pay for it, he is trying to shave back-office costs. The company declines to break out IS budget figures.

At Marion Merrell Dow, IS is a centralized function. IS staff worldwide report to Clark (who in turn reports to the company's chief administrative officer). That includes the staff at the two U.S. data centers, three smaller centers in Japan,

Rockwell International

Rockwell International

keeps a clear, sharp line

between centralized

services and divisional

applications. Decentral-

ized IS chiefs, operating

in very different indus-

tries, report to their

division presidents, not

to corporate.

Canada and Europe, and the company's network staff—about 200 employees altogether. In addition, about 150 IS staff supporting R&D sites and another 60 supporting commercial sites report in a strong dotted line to Clark.

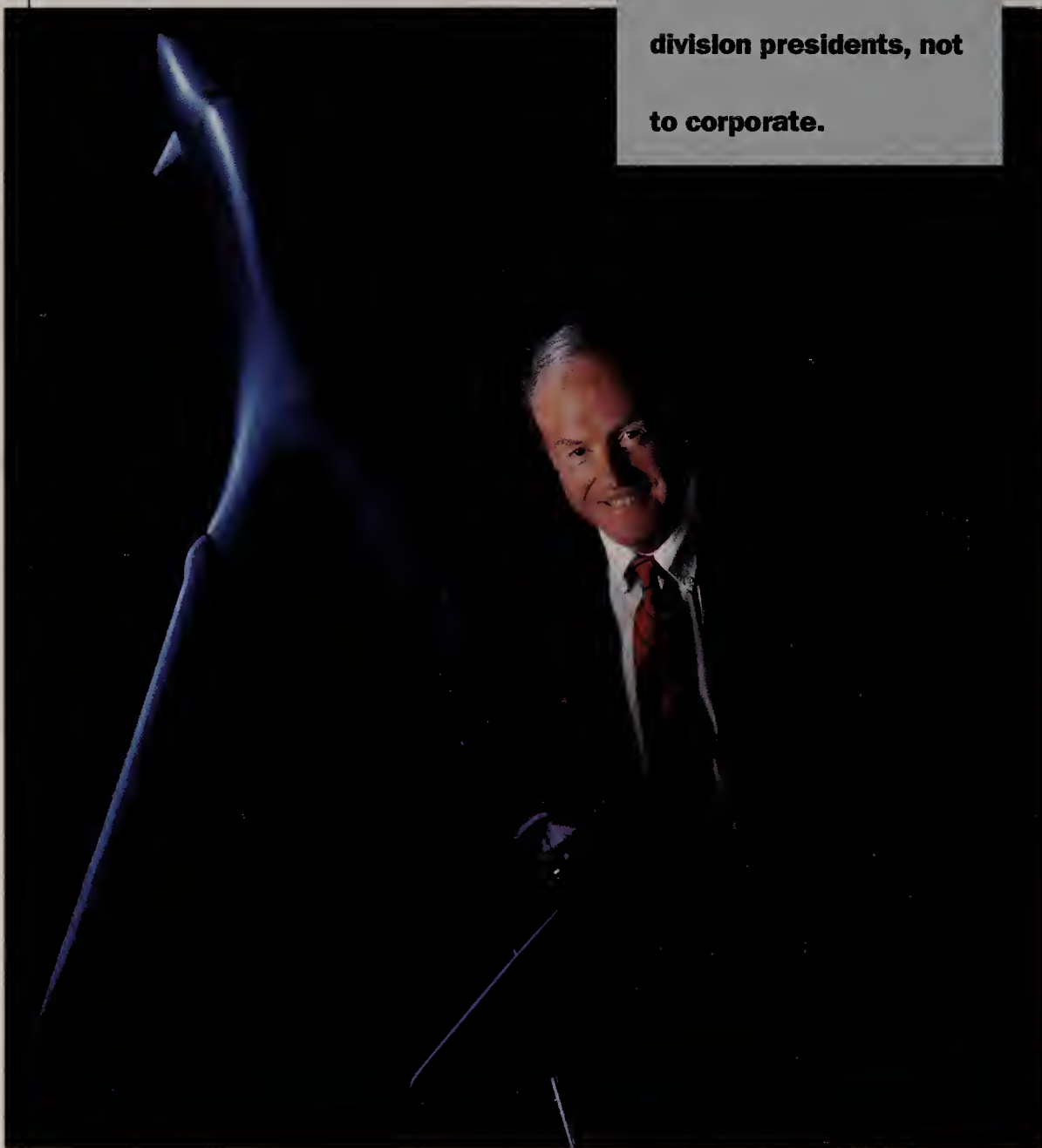
Sites have some autonomy to pick systems. "In our mind, discussions about standards have no value," Clark said. "What's important are the applications and how they benefit the company. We might use DEC, IBM or Unix equipment to accomplish that. It doesn't matter—whatever is the most appropriate."

On the other hand, Clark has issued some limited guidelines on communications, so that distributed information systems can hook into the telecommunications infrastructure. Within R&D, Clark tries to ensure that important applications common to different sites are replicated. Moreover, while manufacturing and R&D sites have control over their own IS spending, Clark is trying to review budgets in order to strike more balance in IS spending worldwide.

"Country by country, one may have a lot of technology and another very little technology," Clark explained. "As we continue with the merger, we're slowly trying to sort out and adjust the technology portfolio [throughout the organization]."

Clark, too, spends a great deal of his time on the road or on the phone, managing his myriad IS and corporate responsibilities. (In addition to IS worldwide, the entire U.S. commercial side of the company reports to him.) He feels he must especially support information systems staff at remote sites.

"They have a hell of a dilemma," he explained. "They have continuity issues—they have to keep the business running—and individual problems, such as the need for more capacity. Then they also have global telecommunications issues to contend with. We [at corporate] spend a lot of time with local IS and their general managers, trying to help them to understand everything on their platters."



JIM SUTTER: *When disagreements pop up with divisions, corporate plays the role of devil's advocate.*

PHOTO BY STEVEN BURR WILLIAMS



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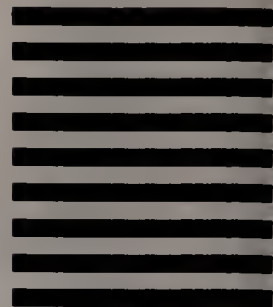
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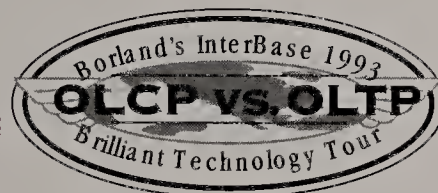
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THE STORY IS different again at Rockwell International, the \$12.3 billion industrial company based in Seal Beach, Calif. Jim Sutter, vice president and general manager of Rockwell Information Systems, is responsible for the corporate mainframe, the network (voice, video and data), corporate applications and office automation for corporate services, and selected multidivisional applications. He also sets policies, strategy and standards, and handles central purchasing.

But most applications used in the corporation are the responsibility of the divisions—where IS is entirely decentralized. Like PepsiCo, Rockwell's corporate office is an overlay on decentralized business units that operate in very different industries: aerospace, electronics, automotive and graphics. But like Marion Merrell's Clark, Sutter has some sway over the style and shape of IS at his company.

For instance, corporate IS must review planned purchases by the decentralized IS units of any equipment that isn't provided by a company on Rockwell's list of approved vendors. The list is created and maintained by an IS council composed of top corporate and divisional IS directors. If the corporate group does not concur with the local IS department's plan, it can stall the purchase through protracted debate but not block it. Budgets are decentralized, and Sutter's group doesn't have veto power.

Recently, one division wanted to buy imaging software and hardware from Wang Laboratories, although the troubled Lowell, Mass.-based company had been dropped from Rockwell's vendor list more than three years before. Sutter recalls that corporate IS saw no problem with the software purchase but looked askance at Wang hardware. "We wanted them to pick another platform," Sutter said. "We debated and argued [the issue]. Eventually the argument dragged out long enough that the issue became moot—Wang went into Chapter 11." By then the divisional IS group had begun to lose its enthusiasm for Wang

hardware anyway, and in the end decided to run the software on IBM RS/6000 machines.

"Still, technology issues usually aren't this clear-cut," Sutter added. "And if we disagree, most of the time we come to an accommodation. We [at corporate] play the role of devil's advocate. We make sure the alternatives get aired."

Sutter makes sure that other IS issues are aired and shared also. Corporate and divisional IS leaders meet three times a year to discuss corporatewide issues such as standards. Another cross-divisional technical

group meets almost monthly. In the meantime, corporate IS stays in constant touch with the divisions and often serves as a conduit for technical information throughout the corporation. Sutter also has people on his staff who have developed an expertise in such technical specialties as MRP, imaging and supercomputing. The experts are available to the divisions.

More importantly from a cost perspective, data centers and mainframe applications are centralized under the auspices of corporate IS. Charges for the storage and processing of the divisions' mainframe-based applications (such as financials) and for traffic along the corporate network are billed to the divisions. In contrast to the more delicate negotiations that are underway at PepsiCo, Rockwell's centralized control of the corporate mainframes has allowed for the consolidation of four data centers into one during the last few months, a cost-cutting move that Sutter says will save Rockwell \$15 million a year.

**Rockwell's centralized control of the corporate mainframes
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"Corporate IS is a service center for the divisions," said Al Griffiths, director of IS at Rocketdyne, Rockwell's \$1 billion propulsion systems division. "I buy services from them."

But this is where centralized ser-

vices end. Griffiths calls his own shots at Rocketdyne. Rockwell's decentralized IS chiefs report to their division presidents; each IS chief maintains his or her own budget, does long-range planning and chairs a local IS steering committee.

Aside from meeting corporate mainframe and networking tithes, Griffiths spends his \$40 million annual budget on local telephone service and a variety of local systems, including a heavy emphasis on scientific computing. He buys and manages equipment (mostly workstations) for his division's needs. Griffiths also maintains a DEC network link to NASA, Rocketdyne's most important customer. Rocketdyne's propulsion systems power NASA's space shuttles, and the company computationally monitors the performance of its product with each launch.

Other Rockwell divisions also tailor technology to meet customer demands at the local level. Engineers in Rockwell's automotive division use one CAD system for Chrysler contracts and another for Ford, and engineers in the aerospace division use a third. Corporatewide standards may shave costs, but if they get in the way of business they will also shave profits—so these shots are best called by the divisions.

"In aerospace, you have projects that involve four or five different corporations," said Griffiths. "In those situations, customers may want to set standards so that information can flow between the partners. We try to be real accommodating to customer demand. We have to be flexible. The standards they require from us may not be identical with internal standards."

How is the issue resolved? "You negotiate," said Griffiths—which may, in a word, sum up the way chaos and control are balanced in any combination company. ☐



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The marketing VP at a large bank approaches his IS chief with a request: He wants the names, addresses and salary levels of all recent mortgage customers to use as targets for a new mutual-fund product pitch. The IS executive knows this personal data was collected specifically for loan-approval purposes, and not as fodder

ETHICAL GRAY MATTERS

Very little is black and white when it comes to issues such as data integrity, employee privacy and vendor relationships. Lacking clear-cut answers, information executives must choose carefully between the right and the not-so-right.

.....

BY RICHARD PASTORE

for a securities-marketing campaign. Should he or she comply to satisfy the internal customer, or withhold the data to protect external customers' privacy?

It's gray areas like this that keep IS executives awake at night, not the sorts of outright criminal acts that grab headlines. IS ethics are

more realistically defined by concern for data usage, integrity and security; protection of personal privacy and software copyrights; and vigilance for possible conflicts of interest and improper vendor relationships.

No longer can IS managers look the other way when ethical dilemmas arise, nor can they defer to outdated corporate ethics codes that rarely mention IS. "Information is power, and CIOs have an ethical responsibility to ensure that power is not abused," said Gary Edwards, president of the Ethics Resource Center, a corporate consulting firm in Washington.

Moral convictions aside, careful attention to ethics is also sound business practice, particularly for firms handling sensitive data, such as insurance or credit-reporting agencies. "A company like ours depends on consumer confidence, so it makes business sense that we examine carefully how we use the data," said John Baker, senior vice president of corporate public affairs at Equifax Inc., the Atlanta-based credit reporter. Equifax, a leader in an industry often criticized for violating consumers' privacy rights, has striven to regain credibility by pursuing a higher ethical standard (see related story, Page 60).

The first challenge for ethically minded IS chiefs is determining where their responsibility begins and ends. Some argue it should end at the walls of the data center. "We have to ensure that the data we deliver is of the highest quality and integrity, but our responsibility doesn't extend to the end user's use of it," said John Piasecki, vice president of MIS at Stride Rite Corp., a Cambridge, Mass., shoe manufacturer noted for high moral standards in employee and community relations. Instead Stride Rite relies on its user managers to heed a corporatewide ethics code and enforce ethical data usage.

Others contend that IS should actively encourage ethical information usage. "CIOs are in a unique position to educate the business side on the uses and abuses of data. They can't just say it's not my problem,"

ILLUSTRATION BY JAMES KACZMAN



said Kavin Moody, former IS executive at Gillette Co. and now a consultant.

This proactive approach is standard at the National Association of Insurance Commissioners, a Kansas

mon ethical dilemmas and some strategies for resolving them.

Data integrity. When business decisions are based on data IS provides, the key ethical dilemma is determining "how accurate" the data

"CIOs are in a unique position to educate the business side on the uses and abuses of data. They can't just say it's not my problem."

—Kavin Moody

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City, Mo., group that maintains databases on insurance agency finances and investigations of agency misconduct. Before selling selected data to external customers, the group's IS department attaches a document that warns users against potential misinterpretations. IS also interviews potential customers about their intentions for the data, occasionally nixing a sale "because we weren't comfortable with the way they were going to use it," said IS Director Jim Rose. "The last thing I want to do is provide data to someone who misuses or misinterprets it and causes harm to policyholders."

At New York-based cosmetics company Avon Products Inc., data ownership determines the boundaries of IS ethics responsibility. "If a department requests data they have a right to, I don't question what they do with it," said Vice President and CIO Raymond Perry. But if Department A should request data originally collected by Department B, Perry would require B's permission before honoring the request. In addition, he said he would "seriously challenge" any department's requests to ship data tapes outside the company.

Other areas of responsibility are less debatable: IS managers generally accept their accountability for data integrity, security and the like. The challenge is to recognize and defuse any ethics time bombs before they can blow up and harm the company and the CIO's reputation. The following is a sampling of com-

needs to be. "It's easy to throw up your hands and say there will always be errors and transpositions. Or you can triple-check every piece of data entered in the system," said H. Jeff Smith, assistant professor at Georgetown University's School of Business Administration in Washington. It boils down to a value judgment: If cost or time constraints limit IS's ability to ensure high data integrity, the IS executive should at least raise a red flag, Smith said.

One way to ensure the accuracy of data is to enlist staff auditors. At the National Association of Insurance Commissioners, auditors perform 12,000 edit checks on every insurance-company financial statement before it is entered into the Association's database. Also, attorneys review all reports of agency misconduct for proper procedures. "Nothing enters the system until our lawyers review it," Rose said.

Not only must CIOs ensure the accuracy of new data, they must make sure it stays accurate as it wends its way through the labyrinth of distributed systems. At Stride Rite, automatic routines check to make sure no data is accidentally dropped as it passes over the network from one system to another. "If you're sharing data between divisions, you've got to make sure it all gets there," Piasecki said. Otherwise, business decisions will be based on incomplete, inaccurate information.

Data security. For IS managers the most practical problem is how to grant flexible access while shielding the data from unauthorized users.

After Connecticut Mutual Life Insurance Co. migrated to a distributed environment, IS feared that enhanced user access would compromise existing security. The Hartford-based insurance firm's solution was to build new access monitors into its reengineered systems. Now, while users enjoy liberal access, the system notes who opened each and every file and whether the access was business- or IS-related. IS employees oversee these reports, and if there are any problems they notify the business-side manager who owns the data in question.

Internal IS ethics. Pressure to meet strict budget limits and unreasonable delivery deadlines can provoke developers to compromise their professional ethics by cutting corners. Desperate to deliver on time, they may decide to deliver only a partly functional system, hoping to fill in

Where Private's on Parade

.....
Equifax is hoping that its very public commitment to privacy will win new business and help people forget its sins of the past

What price ethics? How about one percent of your yearly revenue? Or maybe \$2 million in unrealized annual profits? That's only part of what Equifax Inc. sacrificed to pursue a higher ethical standard. In the face of public outcry over privacy protection and misuse of personal data in the credit-reporting industry, the Atlanta-based company has chosen a long-

the gaps before users catch on. Or, in order to meet a deadline, they may withhold knowledge that the original system specifications will not adequately meet functional requirements.

Unfortunately, corporate codes of ethics are not much help to IS practitioners. Rarely do they refer specifically to IS and information issues. Even those that do, such as the code devised by Dallas-based Texas Instruments Inc., cannot directly resolve day-to-day ethical questions. Rather, they set the tone of the organization's ethical intent. "It's a mind-set," said John White, president of TI's information technology group in Plano, Texas. White encourages his staff to reread TI's 32-page ethics booklet every couple of years as a refresher.

Another way to safeguard IS ethics is to provide a means for whistle-

Pressure to meet strict budget limits and unreasonable delivery deadlines can provoke developers to compromise their professional ethics by cutting corners.

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blowers to raise their concerns without fear of reprisal. "CIOs must ensure that everybody is aware of an alternate means of reporting misconduct other than to their direct supervisor," said Edwards of the Ethics Resource Center. Boeing Co., TI and a handful of other firms have designated ethics officers—full-time,

high-level executives to whom employees can turn with ethics concerns. To help ensure discretion, TI implemented an anonymous, untraceable E-mail subsystem, while Boeing has set up a direct hot line to the ethics adviser's office.

Right to privacy. E-mail peeping and performance monitoring are thorny issues that, if mishandled, can destroy the employee-management relationship. Yet in many cases, neither top management nor IS has a clear enough understanding of the issues to set policy. "No one knows what E-mail is—is it like a letter? So it's hard to know what standard of conduct to apply," said Jan Scites, senior vice president at Connecticut Mutual. The firm is considering deferring the decision to users, who could indicate by typing certain codes which of their E-mail messages are private (and therefore shielded) and which are not.

At Avon, there was similar uneasiness over electronic performance monitoring, which can include terminal keystroke counts, typo tracking and even telephone-call eavesdropping. "The industry is still not comfortable with the ethics of machine monitoring," Perry said. Avon compromised by displaying monitored employee-performance statistics on the worker's own CRT. "That way, they know it's happening and they can control it themselves." Avon draws the line at telephone-call monitoring, however. "Our consideration of employees would never permit that."

Software piracy. Consensus on this issue has shifted over time. IS managers who once thought nothing of copying vendors' software now set strict policies prohibiting this practice. But policing those policies is another matter entirely. "We are committed to enforcing copyright laws, but practically, it's difficult to keep track," said Demetrios D. Lappas, former IS executive at Nabisco Foods Group and now vice president and CIO at New York-based Borden Inc. Efforts to match software and computer serial numbers often fall to bits as machines are moved or re-

term strategy of ethics leadership at the expense of short-term profits.

The public doesn't trust us to protect their privacy: That was the bitter pill Equifax swallowed after conducting surveys in the late '80s. Public suspicion boiled over into outrage at the end of 1990, when Equifax and partner Lotus Development Corp. announced they would market compact disks containing names, addresses, salaries and buying habits of virtually every American with a credit history. The furor forced an embarrassing cancellation of the four-year, \$5 million investment and marked a turning point for Equifax's commitment to information ethics.

"Following the Lotus incident, we decided to withdraw entirely from providing marketing lists of data in our consumer files," said John Baker, senior vice president of corporate public affairs at Equifax. A rapidly growing business for the industry, marketing-list sales were pulling in \$12 million in revenue and turning an annual \$2 million

in profit for Equifax. But the firm believed it had more to gain by rebuilding the public's confidence and fashioning a reputation for peerless information ethics, Baker said.

As part of this effort, Baker, legal staff and an outside ethics consultant audit internal users as many as 30 times a year to make sure they adhere to privacy-protection policies. Customers—the banks that access credit histories—must pass an elaborate qualifying process and sign detailed usage contracts. Equifax backs up these safeguards with electronic monitoring, audit trails and traps to catch transgressors.

In the long run, Equifax is confident this privacy crusade will make economic as well as ethical sense. Equifax's data will be perceived as better protected and therefore more accurate, Baker said. Bank customers and maybe even consumers will "look at our reputation and want us as their preferred stewards of their information." That would be a good deal at most any price.

—R. Pastore

deployed. "Do we all have accurate records of a software copy's license and serial number? The answer is no," Lappas admitted.

Vendor relationships. How "friendly" should one be with IT vendors? On the one hand, a close relationship could earn the organization better deals and advance product information. But becoming too cozy with preferred vendors could also compromise ethics standards. "We have a strong policy on competitive bidding that won't allow us to crawl into bed with any vendor," Stride Rite's Piasecki said. The CIO adds his own ethical standards to his firm's policy: "I don't socialize with vendors, even though the company does not prohibit that." Piasecki's stringency sometimes rankles vendors, who complain that he doesn't "trust" them when he solicits competitive bids. "But that's the only way to know you're getting the best deal," he said.

Vendor-relationship ethics can also work in the supplier's favor. At Nabisco, Lappas insisted that IS avoid using one vendor to leverage better deals from an existing supplier. "I will only ask a vendor to come in

for a presentation if we are serious about making a change, not just looking for offers as leverage," Lappas said. "We won't develop good rela-

customers and even competitors also raise new challenges for IS ethics. Data readily shared between two firms working on a joint venture could have

Connecticut Mutual is considering allowing users to decide which of their E-mail messages are private (and therefore shielded) by typing in certain codes.

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tions by stringing along vendors."

Conflicts of interest. By the nature of their jobs, IS leaders develop considerable expertise that could generate lucrative incomes if exploited in a consulting practice or similar side business that infringes on the turf of the employer. If not outright unethical, this practice at least offers the potential for misconduct. For the most part, corporations have set policies that either prohibit or limit such practices. "I'm not allowed to have an external business of any kind," said Arthur Hitsman, president of Seattle-based Boeing Computer Services. "I wouldn't even consider taking the experience the company helped me get and using it for personal gain" in a competing business. Another potential for conflict occurs when IS managers own stock in vendor companies that their employers do business with.

Even for IS chiefs who have worked out solutions to these ethical dilemmas, the respite will be short-lived. Technology trends already at work will further blur the line between right and wrong and make IS ethics even harder to define and enforce. The advent of distributed computing, with its more liberal access and sense of user ownership, already has IS executives worried, according to Richard Arns, executive director of the Chicago Research and Planning Group in Barrington, Ill. Members of this local IS executive affinity group have voiced growing concern that the distributed trend makes it harder than ever to safeguard data integrity and security.

Informational links with suppliers,

competitive value when those same companies later compete over another venture. CIOs must make sure to protect this data from unethical exploitation within their organizations. For example, Boeing and its external partners sign agreements to protect each other's data. If shared data is sufficiently sensitive, Boeing will house it on a standalone system for extra internal security. At Texas Instruments, the E-mail system helps shield intercompany messages from prying eyes by encoding those intended for external users and those limited to internal use.

Globalization is another trend complicating IS ethics policy. Actions that violate common ethical standards in one country may be de rigeur in another. One U.S. firm, for example, would never allow bribes to state agencies or regulators to facilitate IS objectives. But in that company's overseas locations, this type of payola is standard practice. The firm has had to relax its policy to suit the norms of the region.

With all these issues to worry about, it's easy to lose sight of why one should care about ethics in the first place. Lest anyone forget what's really at stake, the introduction to TI's ethics guidebook offers a cogent reminder. Writes TI Chairman Jerry Junkins: "We owe it to ourselves to exercise the highest standards and best judgment in making ethical choices. By continuing to uphold these high standards, we will preserve the integrity of our people, the reputation of the company, and the trust and confidence of the public in every part of the world." [C]

Additional Reading

For more information on ethics issues, please see the following stories from past issues of CIO:

"Do the Right Thing"

May 15, 1992; Page 26

An Insights column on how new legislation and pressure from professional societies is creating an impetus for IS departments to consider ethics

"Fear of Prying"

June 1991; Page 24

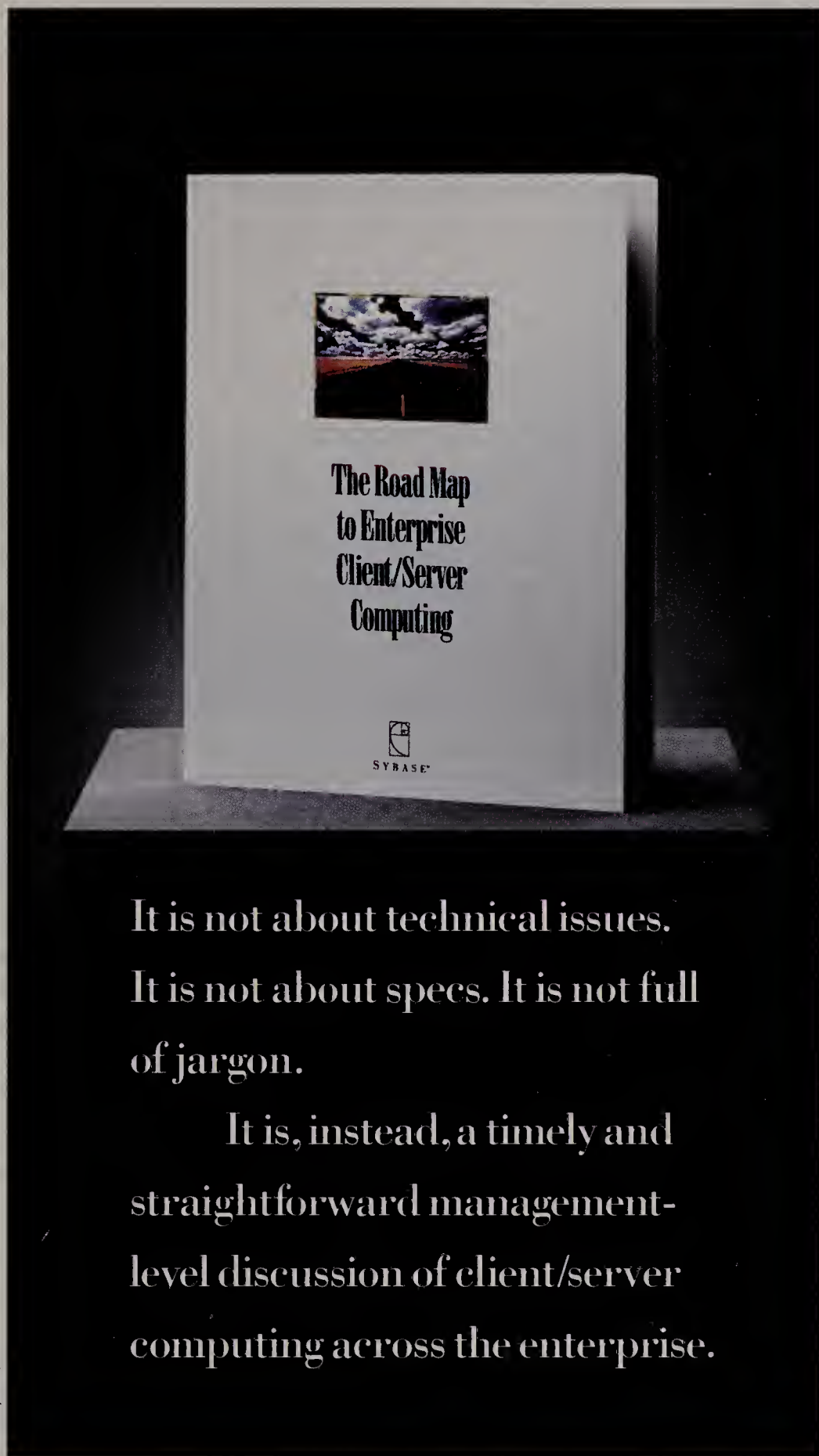
An Insights column on the legal and ethical implications of electronic performance monitoring

"Beware the Copy Cops!"

Nov. 1, 1992; Page 68

A State of the Art column on how to put an anti-piracy program in place

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A Really Big Show

Today's presentation software offers zippy visuals and effects along with new ease in preparing presentations. But users beware—too much sizzle can obscure the steak.

BY LUCIE JUNEAU

It takes a lot more than a little self-confidence and a winning smile to deliver a good presentation. These days, you've got to have high-quality visuals. Dale Carnegie himself would be hard-pressed to get a message across without them.

In the last 10 years, computer-generated graphics have raised the standard for presentation materials. In most business environments, hand-drawn charts and graphs are no longer acceptable. Today's audiences expect visuals to look professional. And in many of the best presentations, graphic images don't simply complement the speaker's message; they deliver it and drive it home.

Studies support the common-sense assumption that the use of solid visuals will strengthen any presentation. A study of presentation effectiveness conducted by Douglas Vogel, associate professor of management information systems at the University of Arizona in Tucson, concludes that the judicious use of color and

graphic elements or icons, for example, results in increased audience attention, comprehension and retention. Furthermore, high-quality graphics add to a presenter's credibility and increase the likelihood that an audience will act on the information it receives.

On the other hand, users who get carried away with fancy visual effects risk compromising the audience's understanding and retention of the material presented, according to Vogel. Elaborate transitioning effects between visuals can be particularly distracting, and the overuse of graphic icons can lead to "MacRubish."

Obviously, good taste and common sense should prevail. While it may not always be necessary to use \$50 slides, when in doubt, it's best to use high-quality presentation materials, Vogel's study suggests.

Unfortunately, while PCs and presentation software have done a lot to improve the quality of presentations, they haven't always done as much to make the job of preparing presentations easier. Until recently, presentation software hasn't been particularly intuitive. As a result, most users—who use presentation software much less frequently than their word-processing software, for example—have had to scale rather steep learning curves each time they prepare a presentation.

The good news is that within the last two years, major improvements in presentation software packages and an evolution in the consumer hardware base have made such software easier to use. For example, in the previous generation of presentation software, each page or screen of a user's presentation had to be stored in a separate file. That made managing presentations difficult. If a user wanted to change a basic design



ILLUSTRATION BY TIM LEE

element appearing on each page or screen, for instance, he or she would have to retrieve and edit multiple files. Today's leading packages store entire presentations in a single file, so a user can change every screen with a single editing command.

An evolution in the consumer hardware base has made the use of presentation software packages more feasible and affordable. A few years ago, someone interested in getting into presentation software would probably have had to first invest in such basics as a graphics board (a VGA board, for example) and a mouse. Today, many if not most prospective users already have these tools; any user whose machine is equipped with Microsoft Corp.'s Windows will almost certainly have them.

Since vendors first introduced Windows-based presentation software packages in 1990, sales of these packages—which average about \$500 and include Windows-based versions of Software Publishing Corp.'s Harvard Graphics, Lotus Corp.'s Freelance Graphics and Microsoft's own PowerPoint—have been growing much more quickly than sales of DOS-based presentation products. Because these packages are so much easier to use than their predecessors—how better to develop presentation visuals than with a graphically based tool?—more users have been giving them a try. Although only about 7 percent of all DOS users have ever used presentation software, about 15 percent of all Windows users have done so, vendors say.

Vendors of DOS-based packages, such as WordPerfect Corp. (which will soon introduce a Windows version of its product), are now competing by offering Windows-like features—including pull-down menus and dialogue boxes—in their DOS products. And presentation tools such as Aldus Corp.'s Persuasion bring similar capabilities to the Apple Macintosh environment.

In essence, what users want from their presentation software is a graphic artist in a shrink-wrap, according

to William Coggshall, president of Pacific Media Associates in Mountain View, Calif., a market-research firm specializing in presentation graphics and multimedia software. After inputting a few words and numbers, they'd like to see their presentations created automatically.

In addition to offering user-friendly graphical user interfaces, vendors are now doing their best to provide

As multimedia usage grows, more presenters are expected to begin incorporating a variety of media effects in their presentations.

users with their impossible dream by equipping products with labor-savers such as standard templates or style sheets, outlining capabilities and the ability to view an entire presentation at a glance.

Speakers who prepare their presentations the night before delivery—which the majority of presentation software users do, experts say—will particularly appreciate the ability to choose from fill-in-the-blank templates or style pages. Most new packages on the market offer users a wide variety of style sheets that they can either customize or use as is. These master pages free the average user from having to match colors, choose appropriate typefaces and sizes, and determine how to lay out text and graphics. When more experienced users or experts in the graphic-arts department create a presentation, they can use the style sheets as a starting point for their own designs.

The inclusion of style sheets in presentation software makes it much easier for users to maintain a consistent style throughout a presentation, and that in turn helps deliver a coherent message. Furthermore, users who develop a portfolio of slides

in a particular style can mix and match them when preparing subsequent presentations. (Today's most popular products allow users to easily change styles from within their software packages. But a user who has invested in producing a physical product—color slides, for example—will probably want to build on that investment from one presentation to the next.)

Vendors of the most up-to-date products also offer outlining capabilities to help users organize their thoughts and create presentations more quickly. The text that users develop in an outline can typically be transferred automatically to their style sheets, or vice versa. Major outline points become subtitles of visuals; subpoints become bullet items. By linking the creation of text to the creation of visuals—and allowing users to quickly switch between style pages and outlines—presentation packages can help create stronger, more persuasive presentations.

The capability to view entire presentations at a glance is another recent innovation. Sometimes referred to as a "slide sorter" or "light table," this feature allows users to organize the flow of their presentations by manipulating thumbnail-size visuals on their screens. The only drawback, experts like Coggshall caution, is that it's hard to read the text on the tiny visuals.

Presentation software users typically transfer their presentations to either 35mm slides or overhead images. Overheads—often in black and white, sometimes in color—are usually created by printing screen pages out on transparencies. To create 35mm slides, users generally send their electronic files to professional laboratories (which may provide a one-day turnaround) via floppy disk or modem. Some vendors have established ties with particular labs and recommend that users work only with these professionals. Users in large companies may have access to film machines capable of outputting slides.

A growing number of presenters now display their creations right on their PCs or use projection panels to project the images from their PCs onto larger screens. Running their presentations in this way allows speakers to incorporate transitioning effects such as fades or diagonal wipes between their images. Some vendors have incorporated some very clever and eye-catching transitions in their packages. Users of Lotus's Freelance Graphics can open and close a graphic curtain between images, for example.

Users who choose to display their presentations using PCs and/or projection panels can also employ visual movement effects, called "builds." For example, a user could display bulleted items being added to a bullet chart, grow a bar in a bar chart, or show a light bulb icon becoming illuminated.

Vogel's study found that the combined use of such rudimentary animation techniques and transitioning effects resulted in the most effective presentations overall, increasing the impact on the audience and improving the audience's perceptions of the presenter. The use of transitions can help focus attention on the visuals, while simple animation techniques help emphasize concepts on complex charts and increase audience comprehension and retention, according to Vogel. Together, the animation and transition effects create an impression of professionalism.

One interesting finding of the study was that the use of transitions with plain slides that don't include animation is relatively ineffective, presumably because the use of sophisticated transition effects with very basic visuals creates cognitive dissonance. Presenters need to be particularly cautious when using transitions, Vogel warns. Because they don't add a lot of value, focusing too much attention on them can draw an audience's attention away from the presentation's visuals and distract them from its content.

The easiest way to project PC images onto larger screens is by using LCD presentation panels made

by companies such as 3M and In Focus. The glass LCD panel, which is approximately an inch thick, is connected to the user's PC and laid over a conventional overhead projector. (Proxima Corp. has an interactive pointer system called Cyclops that rests on an overhead projector; using an LCD projection panel equipped with a camera, a computer and a pointer, presenters can pull down

A user could display bulleted items being added to a bullet chart, grow a bar in a bar chart, or show a light bulb icon becoming illuminated.

menus, draw and select objects and perform other mouse operations directly on the projected image.)

Unfortunately, not all projectors emit enough light to penetrate an LCD panel and still project a high-quality image. And not all conference rooms are equipped with PCs. In addition to providing their own facilities for producing charts and graphs, all of the most popular packages on the market today allow users to import data from popular spreadsheets, including Lotus 1-2-3 and Microsoft's Excel. What's new is that some packages now allow users to display screen images of files from their spreadsheets, word-processing packages or other applications right in their presentations.

Another enhancement may be an even bigger plus: In many cases, data imported from third-party spreadsheets can now be updated automatically as the original data changes. Windows-based packages provide this "live links" feature by supporting Windows' DDE (Direct Dynamic Exchange) standard. But experts advise that with this feature, a user

could potentially be caught unawares if the data included in the presentation shifts substantially between the time the user prepares the presentation and the time the output is created or presented.

As multimedia usage grows, more presenters are expected to begin incorporating a variety of media effects in their presentations. Today, only the most elaborate presentations are multimedia, vendors and experts say.

Multimedia software packages allow users to combine sound, text, graphics, motion, animation and movies. But many are difficult for novice users to master. And most cannot be used independently: They're designed for use with traditional presentation software tools, which can import their output. The Action! multimedia package from San Francisco-based Macromedia, however, is an example of a product that can be used on its own to create a final presentation.

The use of audio effects is on its way to achieving widespread popularity among presenters, vendors say. New voice boxes that plug into users' parallel ports may soon begin to replace sound boards, encouraging more users to experiment with audio. But users who incorporate a voice or other sounds into their presentations must be careful how they orchestrate the audio element, because it can trip up the speaker by interfering with his or her voice.

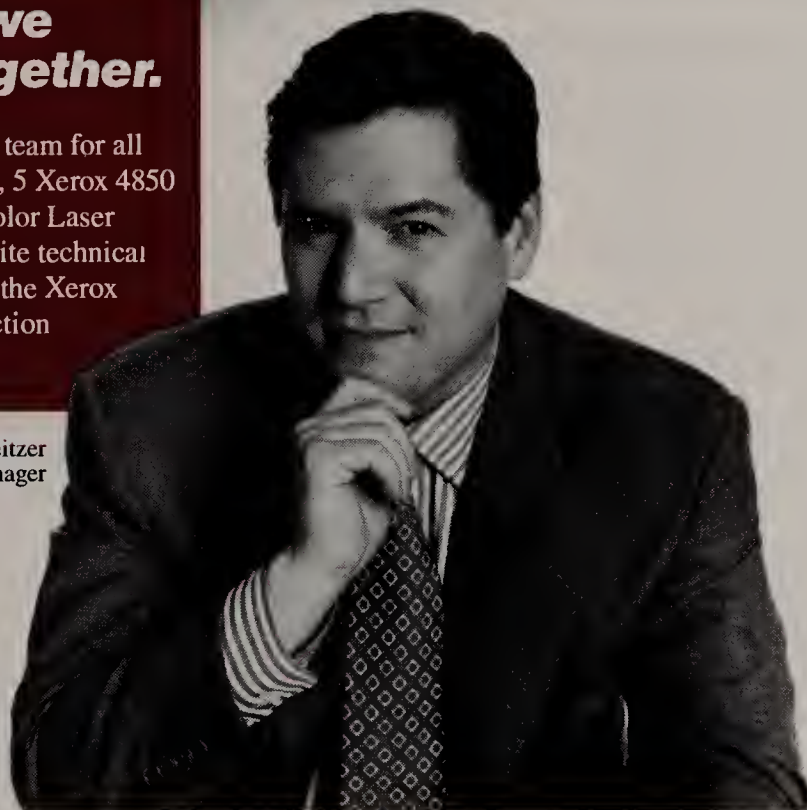
True to conservative form, IS professionals probably won't be the first to experiment with the fanciest presentation tools. In a survey of professionals in various walks of life, Coggshall's Pacific Media Associates found that IS professionals tend to rely on the most rudimentary visuals. But they would do well to invest in up-to-date materials. Using professional presentation tools, mediocre presenters actually outperform better presenters, Vogel says. And even the best presenters produce stronger presentations. ☐

Lucie Juneau is a freelance writer based in Salem, Mass.

***To add value to their database,
they need to add color
to their data.***



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FRONTLINE



BY PORTIA ISAACSON

The ability to run imaging applications—once available only to large organizations with extensive resources and pressing needs—on existing client/server systems can transform the way your company does business

PHOTO BY WEBB CHAPPELL

Now You See It...

WHEN A PICTURE IS A THOUSAND WORDS

Want to make a big difference in your enterprise with only a small risk? Try reengineering a paper-based system into a client/server imaging application. Here are a few trailblazer case studies:

■ Allen Coumyer, senior vice president and manager of Texas Commerce Bancshare's Data Center Division, led the reengineering of TCB's mission-critical consumer-loan application. Today, consumers may apply for credit at any of TCB's 92 branches by completing a paper loan-application form. The form is faxed to the Consumer Credit Operations Center, where it is received by a ViewStar client/server workflow application running on a PC LAN. As the loan application is passed from person to person electronically, all needed information is available at each station, including the loan-application image, the workflow information and a 3270 window for accessing or modifying mainframe data. TCB has doubled its monthly loan volumes, increased revenues, decreased loan-processing time from days to hours and increased customer satisfaction with its loan-application imaging system.

■ John D. Loewenberg, CEO of Aetna Information Technology, a division of Aetna Life & Casualty, led the company's implementation of health-claims image processing. The greatest benefits of this effort, which enabled document tracking and one-step processing, were the re-

The challenge in building imaged-paper systems is more often in implementing client/server than in implementing imaging atop a stable and well-managed client/server system.

defined workflow, dramatic cost reductions, and improved customer service, quality and security that resulted, according to Loewenberg.

■ Lonnie Hellman, manager of corporate systems development at Meridian Oil, led the reengineering of Meridian's paper-based accounts-payable system to one employing imaging. The imaging system enables commonality in the processing of paper-based accounts-payable transactions with electronic

data interchange (EDI) transactions among five branches where invoices are received and the central office where checks are printed.

These and other executives proclaim enormous return on their client/server

imaging-systems investments. Most are expanding their present image applications as well as adding new ones. The most dramatic returns are often attributed to the customer-centered workflow redesign made possible by imaging technology.

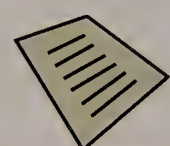
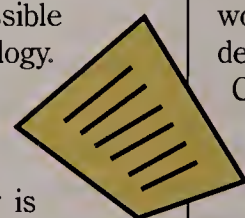
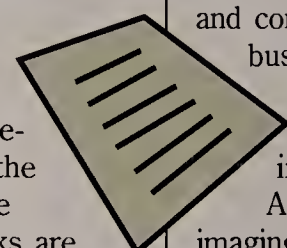
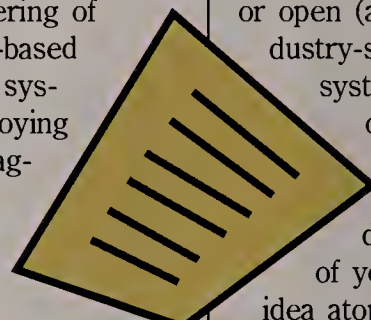
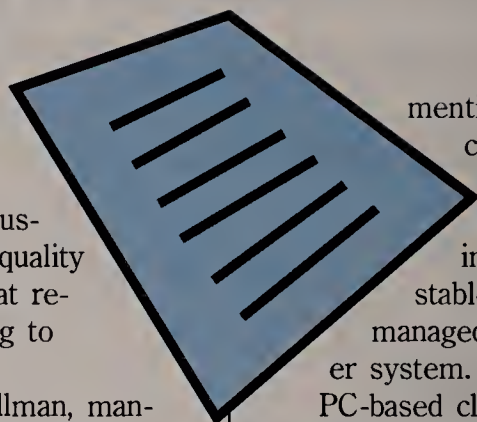
If imaging is so great, why isn't everyone doing it? The main inhibitor is the expense. However, the cost is made manageable in client/server implementations that take advantage of existing hardware investments. The challenge in building imaged-paper systems is more often in imple-

menting client/server than in implementing imaging atop a stable and well-managed client/server system.

PC-based client/server imaging is substantially lower in cost than the proprietary or open (as opposed to industry-standard) imaging systems that were the only choice until very recently. If you haven't done a cost analysis of your favorite imaging idea atop a PC-based client/server system, take a look. It may be much less expensive than you think, and given the pace of change and competition in the PC business, you can count on a 20 to 40 percent annual improvement in price/performance. As you assess your

imaging opportunity, don't make the common mistake of focusing only on the cost-reduction part of the ROI equation. Imaging also offers significant revenue enhancement through customer-focused workflow redesign. If your CFO insists that cost reduction is the only possible justification, get the marketing executive to help you make your case. Imagine the increased customer satisfaction—and the revenue that follows it—resulting from your client/server imaging project.

If you haven't done a cost analysis of your favorite imaging idea atop a PC-based client/server system, take a look. It may be much less expensive than you think, and given the pace of change and competition in the PC business, you can count on a 20 to 40 percent annual improvement in price/performance.



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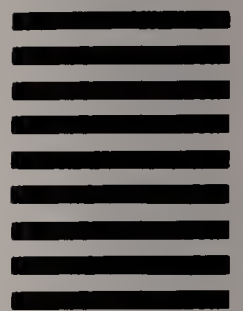
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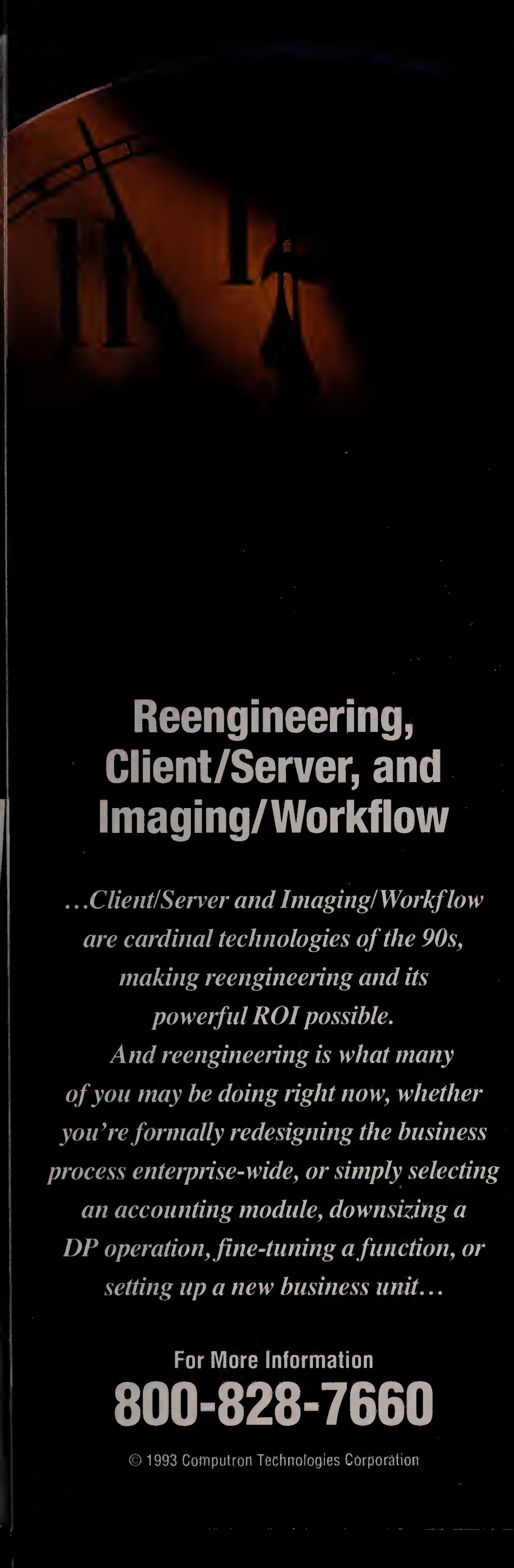
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Computron Seminars 1993

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FRONTLINE

...Now You Don't

IMAGED PAPER IS PAPER, BUT IMAGINABLY BETTER

I recommend thinking about computer systems that capture, store and process images of paper as imaged-paper systems rather than as imaging systems. The term

"imaging system"

is widely used to refer to any type of image capture (photographic imaging, medical imaging); it is not specific enough to evoke the right ideas about possible applications. "Imaged-paper computer systems" (my preferred term), or "imaged-paper sys-

tems" for short, evokes more accurate and creative visions of applications.

Imaged paper is better than non-imaged paper because it can be captured, indexed, filed, stored,

copied, transmitted,

modified and displayed electronically. Because it is accessible anytime, anywhere, it gets

information to front-line workers at the instant they need it, giving them a business advantage.

Imaged paper can be accessed by multiple functions and combined with other imaged, encoded or computer-generated information to enable real-time decisions. Imaged-paper systems with computer-supported workflow design, which I will dub "imaged-paper workflow systems," enable timely workflow re-

design to match changing business environments and resource availability. Imaged-paper flow can be tracked and measured by the computer system implementing it,

design that leads to successful and valuable imaged-paper systems. Although imaged-paper systems have evolved from traditional paper systems, they make possible radically

cesses that touch your organization's customers (order forms, application forms, service requests, packing lists) for reengineering opportunities.

2. Involve customers (or

Although imaged-paper systems have evolved from traditional paper systems, they make possible radically new business systems that change the parameters of competition in entire markets.

The Best of Both Worlds

IMAGED PAPER COMBINES THE BEST OF PAPER AND ENCODED-DATA SYSTEMS

Paper-Based Systems

Familiar and widely used for forms, mail, contracts, notes and scheduling

Portable—preferred by workers on the move

The most common means of exchanging data between enterprises

Accessing paper files is slow and difficult

Providing access to multiple locations is costly

Storing, copying, securing and backing up data is expensive

Encoded-Data Computer Systems

Information is computer-processable but requires data entry; no signatures

Portability may require input from and output to paper

Data exchange between enterprises (EDI) is faster and more accurate

Accessing electronic files is fast and easy

Providing access to multiple locations is relatively inexpensive

Storing, copying, securing and backing up data is less expensive

Imaged-Paper Computer Systems

Has advantages of both paper and encoded-data systems

Portability may require input from and output to paper

Data exchange (scanning or faxing paper images) is faster and more accurate

Accessing electronic files is fast and easy

Providing access to multiple locations is relatively inexpensive

Storing, copying, securing and backing up data is less expensive

thus enabling workflow analysis, load balancing, quality control and personnel-performance monitoring. Imaged-paper workflow systems can involve senior management in designing the enterprise—and that involvement may be the biggest payback of all.

One subtle but extremely important advantage of imaged-paper systems is that they are intuitively understood by people who have always worked with paper. Even executives who are uncomfortable with computers frequently play an essential role in the workflow re-

new business systems that change the parameters of competition in entire markets.

Paper Routes

REENGINEERING WITH IMAGED-PAPER SYSTEMS

Reengineering and imaged-paper workflow systems were made for each other. Here are my Laws of Reengineering with Imaged-Paper Workflow Systems:

1. Look first at paper-based pro-

cess-output recipients) in the workflow redesign to obtain estimates of expect-

ed increased customer (or process-output-recipient) satisfaction—an excellent basis for ROI project justification.

3. Track your competitors' activities in imaged-paper applications—especially those starting or ending with customers—that might yield time-based or other competitive advantages.

4. Reengineer the workflow of your en-

Because undocumented work processes may be as important as work processes that are documented or understood by management, involve as many workers as possible in the workflow redesign. How about a mural in the lobby?

**WE ASKED OUR CUSTOMERS
FOR A FEW GOOD POINTERS**

**ON HOW TO DESIGN A TOTAL
COMMUNICATIONS SOLUTION.**

"Make it advanced."

We don't want promises.
We want powerful features
that work right now.

Union Pacific Railroad

"Make it effortless."

Don't just sell us a
system. Take full
responsibility for
success at every step.

Sky Chefs

"Make it versatile."

We want to access
voice, data and video
information with one
integrated system.

**Cal State University,
Fresno**

"Make it reliable."

When you're as service-
oriented as we are, you
can't afford any surprises
on the front line.

United Ad Label

"Make it flexible."

It has to work for a lot of
different people in a lot of
different configurations.

**Center for
Blood Research**

"Make it fit."

Be willing to learn about
our business and tailor a
system that's right for us.

New Jersey Transit

"Make it expandable."

We want a system that
can meet our needs
today and grow with us
in the future.

**McLaren Regional
Medical Center**

"Make it compatible."

We use equipment from
a variety of vendors.
Can you make it all
work together?

Cox Enterprises

"Make it affordable."

Give us a non-blocking
architecture that doesn't
require a lot of extra
equipment.

Venture Stores

Used to be, the only question was how many phones: "*How many people work here? 106?*"

OK, you need 105 little phones and one big one (for the receptionist)."

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terprise from the outside (your customers) in.

5. Because undocumented work processes may be as important as those that are documented or understood by management, involve as many workers as possible in the workflow redesign.

6. Build the reports and feedback necessary for continuous quality improvement and management insight into the imaged-paper workflow system.

7. Since access to central paper files will no longer be a constraint, re-engineer processes to be independent of location, putting decisions as close to the customer (or process output) as possible.

8. Use the geographic independence of imaged-paper systems to balance the workload of personnel at different locations.

9. Use the immediacy and multiplicity of file access in imaged-paper systems to do parallel processing with immediate integration of results (thus gaining a time advantage over serially processed, traditional paper systems).

10. Organize people around processes, not paper files.

11. Implement imaged-paper systems in client/server system architectures that match the reengineered organization. A system should be managed by the business unit that uses the information.

12. Image paper input and index as close to the source as possible. Use pen computers (with limited encoding) to capture images of paper where paper origi-

nals are not required. Use fax as input or output when paper is required at remote locations.

Would imaged-paper systems make sense in your enterprise? Probably, especially if yours is an information-intensive industry—and whose isn't these days? In a recent survey of its clients by ViewStar Corp., the most frequent reasons given for reengineering paper-based systems into imaged-paper computer systems were to improve document access, to improve document processing and routing, to improve document control and security, to achieve a competitive advantage, to reduce storage costs and to reduce head count.

Paper Tigers

IF I WERE AN INFORMATION EXECUTIVE WITH IMAGINATIVE OPPORTUNITIES

Today there are two quite different approaches to imaged-paper applications, represented by the client/server applications Lotus Notes and ViewStar. Lotus Notes excels at unstructured communications processes that may involve imaged paper (for example, glorified E-mail and correspondence filing in a consulting firm). ViewStar excels at applications that are quite structured and readily specified as workflow processes, such as insurance-claims processing.

If I were charged with putting together an imaged-paper workflow system from scratch, I would, of course, check references for every candidate vendor.

Here are my favored vendors today:

■ ViewStar for imaged-paper workflow software and consulting. ViewStar is the clear leader in client/server imaged-paper workflow systems, with over 100 installations, exuberant reference accounts and recent substantial venture-capital funding.

■ Windows 3.1 and Novell NetWare for foundation client/server software. You are probably using these already; if not, why not? Not benefiting from the enormous value being created around these standards becomes more difficult by the day to justify.

■ Compaq or NCR for scalable servers. Although these systems are not blue, they are industry-standard, high-performance, reliable, well-supported and competitively priced.

■ Dell or build-your-own for client PCs. Dell is growing and profitable in these troubled times for PC companies because it is providing its customers the right balance of price/performance value and support. However, if you are PC self-supporting and -servicing as many large enterprises are, your next step in cost savings is to assemble (or have assembled to spec) your own client PCs.

■ Hewlett-Packard for optical jukeboxes. From 10 gigabytes to near-infinity, HP's optical jukeboxes are the workhorses of massive imaged-paper storage.

■ Kodak for scanners, HP for printers and Radius

for large monitors.

I would design the client/server system with the appropriate level of redundancy, security and backup procedures. Depending on the application, I would use fax for input and output where possible and accommodate notebook PCs and pen computers as remote clients.

I would design my system from industry-standard client/server components with confidence in the continuing annual price/performance improvement of 20 to 40 percent—an important point in imaged-paper systems that have ravenous

appetites for storage, raw CPU performance and datacom bandwidth.

Because many enterprises still operate with paper at the boundaries (in their sales and service operations and with their suppliers), imaged-paper systems offer particular opportunities to create competitive advantages in customer satisfaction, time and vendor performance.

From paper we have built the world of enterprise—and

from imaged-paper we are first re-imagining paper, then rebuilding the enterprise. ☐

Portia Isaacson is president of Dream IT Inc., headquartered in Colorado Springs, Colo., a consultancy, publisher and workshop producer dedicated to providing quality information to customers and creators of frontline IT.

Because many enterprises still operate with paper at the boundaries (in their sales and service operations and with their suppliers), imaged-paper systems offer particular opportunities to create competitive advantages in customer satisfaction, time and vendor performance.



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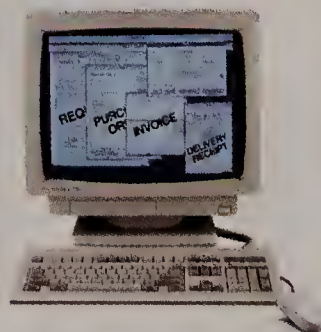
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Page numbers refer to the first page of the article(s) in which the company is mentioned. This index is provided as a service to readers. The publisher does not assume any liability for errors or omissions.

Company Index

3M	64
AT&T	14
Aetna Life & Casualty	68
Aldus Corp.	64
Apple Computer Inc.	28, 42, 64
Avon Products Inc.	58
Bearings Inc.	14
Boeing Co.	58
Borden Inc.	58
Chrysler Corp.	48
CIGNA Reinsurance	32
Compaq Computer Corp.	68
Connecticut Mutual Life Insurance Co.	58
Data Imaging Systems Inc.	76
Digital Equipment Corp.	28, 48
Eastman Kodak Co.	32, 68
Equifax Inc.	58
Ford Motor Co.	48
Gillette Co.	58
Hewlett-Packard Co.	68
IBM Corp.	28, 42, 48, 76
In Focus	64
In-Flight Phone Corp.	14
Individual Inc.	14
Intel Corp.	28
Light Sciences Inc.	14
Lotus Development Corp.	42, 64, 68
Macromedia	64
Marion Merrell Dow Inc.	48
Meridian Oil	68
Microsoft Corp.	28, 42, 64
Motorola Inc.	14
NCR Corp.	68
Nabisco Foods Group	58
Novell Inc.	32, 42, 68, 76
Pacific Media Associates	64
Paramount Pictures Corp.	42
PepsiCo Inc.	48

PictureTel	14
Price Waterhouse & Co.	42
Proxima Corp.	64
Pyxiss.	32
Roadway Express Inc.	14
Rocketdyne	48
Rockwell International	48
Software Publishing Corp.	64
Stride Rite Corp.	58
Summit Information Systems.	14
Sun Microsystems Inc.	28
Tamarack Storage Devices Inc.	14
Tardis Technology	14
Texas Commerce Bancshare	68
Texas Instruments Inc.	58
Texas Microsystems.	14
Unisys Corp.	14
USAir	14
Viacom International.	42
VideoBooth	14
ViewStar Corp.	68
Wang Laboratories Inc.	28, 42, 48
WordPerfect Corp.	64

Advertiser Index

3Com (Regional).	30A
AT&T	37
AT&T Technologies	11
Advanced Network Services	23
ARDIS	6
BMC Software.	15
Borland.	53
BT North America	57
CIO Publishing Inc.	8A, 73
Computer Associates International Inc.	2, 41, 54
Computer Bowl.	9
Computron.	69
Digital Equipment Corp.	C2
EDS	24
Fujitsu Ltd.	71
IBM Corp.	4, 17
Information Builders Inc.	21
Informix.	C4
Lotus Development Corp.	26
Minolta.	73
Open Connect Systems	C3
SAP America Inc.	19
SCO	29
Software Publishers Association	31
Sybase	63
Syncordia	47
Xerox Corp.	67

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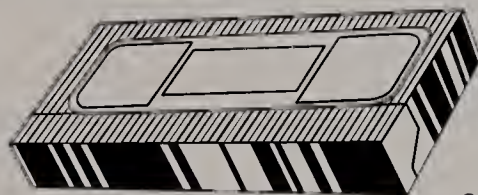
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The FDIC's Borrowed Image

To facilitate the sale of nonperforming loans from around the country, the Federal Deposit Insurance Corp. established a central file-review site for investors. A short-term lease on a high-tech system made it all happen.

Taking advantage of leading-edge technology does not always require a long-term investment of time and money. When the Federal Deposit Insurance Corp. was faced with selling off thousands of nonperforming loans last November, a leased imaging system was seen as just the thing to help the agency manage the one-time auction.

The system, from Data Imaging Systems Inc. of Chicago, streamlined the extensive file-review process so the FDIC could accommodate more investors, who in turn were more fully informed. Once the auction was over, the system was dismantled and returned to the vendor.

The FDIC holds national auctions only when there is a concentration of nonperforming loans. For such occasions, loans are grouped in portfolios (on average, 300 loans make up a portfolio) and sold collectively. This was the case last July when the agency was organizing the November sale of more than 3,100 residential loans for properties in 40 states.

Paper-based loan files contain

information such as collateral documents, property notes, deeds, title policies and legal documents pertaining to proceedings such as bankruptcies and foreclosures. According to FDIC Marketing Specialist Ed Barker, the files are stored at one of 12 originating FDIC offices around the country and together total more than a million pages.

When a central file-review site was established in Des Plaines, Ill., the FDIC needed an alternative to its paper-based system. (Prior to this auction, investors had to travel to multiple sites.) "Moving the paper files to one location was never an option for this sale," Barker said. "It would have required a warehouseful of files and [extra] personnel to keep track of them." Microfilm was a cheaper option, but the FDIC went with imaging because it reduced production time by six weeks and offered greater flexibility. With imaging, for example, packaging all of the Florida loans in one portfolio was simply a matter of data entry.

Data Imaging scanned and indexed all the files, provided the software, and leased and set up the retrieval equipment at the review site. Outfitted with 30 IBM-compatible 386-based PCs with CD-ROM drives linked by a

Novell network, the review site was opened to investors for three weeks prior to the sealed-bid auction. Investors were issued passwords and given sets of CD-ROM disks corresponding to specific portfolios. Instead of having to sift through reams of possibly disordered files to find the specific documents they needed, investors were able to browse freely and in seconds select files and documents from the index. The imaged files contained payment histories; financial data was stored transparently on the network so that files could be updated online.

The use of imaging eliminated the occurrence of misplaced or lost documents. (The loss of a key document could jeopardize the legal collection of a loan, thereby making it unavailable for sale.)

With CD-ROM, a group of 15 investors was able to review up to 50 percent of a given portfolio working four-and-a-half eight-hour days. The same group would have needed six 13-hour days to achieve only a 15 percent sampling rate using paper documents.

Barker believes the technology helped the FDIC's bottom line. "Everything we do is driven by getting the highest prices for the loans," he said. "Our chances of getting the best price are better [when] more investors [bid]." The system made that happen.

—Megan Santosus

VITAL STATISTICS

Organization: Federal Deposit Insurance Corp., Chicago

Application: Optical-disk imaging system

Sponsor: Brad Scott, project manager of the national mortgage sale

Systems Integrator: Data Imaging Systems Inc.

Technologies: Novell network of 30 386-based PCs equipped with CD-ROM drives

Scope: FDIC employees; investors interested in purchasing residential loan portfolios

Objective: To simplify the loan file review process

Payoff: Improved service to investors resulting in a greater number of more informed buyers; reduced agency operating expenses



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The official ESPRITSM Awards entry form will accompany the March 1993 issue of *CIO*. For those who want to get started right away, please fax this form to Editorial Assistant Mina Ahn at 508 879-7784.

We'd like to hear from you if:

- ▶ you can document the dollar-value ROI of a major IT solution;
- ▶ you can explain how your system furthers your enterprise's key strategic goals;
- ▶ your system has been in operation for at least 18 months; and
- ▶ you agree to be featured as one of the case studies in the January 1994 issue of *CIO* Magazine.

A panel of independent judges will select the winners from completed entries received by May 15.

Entrants will be judged on the following:

- ▶ the importance of the application to the organization's strategic business goals and key business operations (as attested to by a member of senior non-IS management);
- ▶ the measurable financial return to the organization; and
- ▶ the extent to which IT was key to the achievement of the return.

Entries must be completed, signed and submitted by the organization's senior information executive and a senior executive partner for whom the system delivers value.

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